Swanscombe Urban District Council.

CERTAIN MATTERS CONCERNING PUBLIC HEALTH

1967 - 1972

(PART 2)

SANITARY CIRCUMSTANCES

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Part 2

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URBAN DISTRICT OF SWANSCOMBE

Report for the years 1967-1972 on certain matters concerning Public Health

PART 2

The duties to which this report contributes were outlined in the introduction to Part 1. It was hoped that the report would be produced in three parts:

1). VITAL STATISTICS and COMMUNICABLE DISEASES.
2). SANITARY CIRCUMSTANCES.
3). COMMENTARY.

Part 1 has already been submitted and I submit Part 2 herewith.

In regard to Part 3, the chances of completing the commentary are getting slim, due to the impending re-organisation. This is unfortunate, as Swanscombe U.D. contains a compact stable population, useful for social study.

Perhaps I might take this opportunity to submit a few observations. The causes of stillbirths and infant deaths were largely unavoidable. The death rates, including those from respiratory diseases showed nothing exceptional. The outbreak of influenza in 1970 had little impact on the annual death rate. The death rate from cancer of the lung was similar to that of Greater London and, if one allows for the play of chance, the same can be said of the death rate from coronary disease. The suicide rate over numerous years was low. There was nothing noteworthy about the incidence of communicable disease. The cases of tuberculosis on the register in 1972 was one fifth of those in 1958.

The vaccination rates for poliomyelitis, diphtheria and whooping cough were good. Vaccination against measles, which began in 1968, resulted in about half the children below five years of age being vaccinated and, consequently, the incidence of measles was reduced. Analysis of the child vaccination rate against smallpox could have been usefully clarified by the avoidance of unnecessary imprecision at higher administrative levels.

In regard to housing, the theoretical success in meeting the needs of Swanscombe residents is noteworthy.

In regard to water supplies, the nitrate content and low fluoride content are subjects of interest.

The effects of the test ban treaty on radioactivity in Kent is a subject for political and biological satisfaction.

The figures for air pollution have shown a persistent downward trend.

I will expand on matters such as the above, if I am able to complete part 3.

J. H. Hudson.

J. H. HUDSON,
MEDICAL OFFICER OF HEALTH.

December, 1973.

TABLE XXX HOUSING

(a) HOUSING PROVISION 1961-72.

SHARED DWELLINGS 1961 CENSUS: Derived from Tables 11 and 13 of Kent Report and correspondence with the Registrar General:

	Dartford Town *	Dartford R.R.D.*	N'fleet U.D.	S'combe U.D.
(a) Existing dwellings shared:				
(i) dwellings with: two households	127	51	64	19
" " three "	11	4	9	2
(ii) households with: two families	297	441	171	54
" " three "	33	49	19	6
Dwellings shared assuming (i) does not include (ii).	468	545	263	81
(b) Total dwellings required where:				
dwellings have: two households	254	102	128	38
" " three "	33	12	27	6
households have: two families	594	882	342	108
" " three "	99	147	57	18
Additional dwellings required to end sharing and provide one dwelling for each of all families, i.e. (b) - (a).	980	1,143	554	170
	512	598	291	89
Population 1961	43,460	51,260	22,380	8,910
Rate per 10,000 population	118	117	130	100

TOTAL DWELLINGS BUILT SWANSCOMBE 1961-72.

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Council enterprise	48	52	32	26	34	30	107	61	36	78	66	26
Private "	43	6	6	18	66	29	-	31	12	10	-	8
Total 1961-72: 825	91	58	38	44	100	59	107	92	48	88	66	34
By Council:												
1 bedroom	32	30	12	2	6	12	-	8	4	12	8	8
2 "	8	8	8	8	28	6	16	21	8	28	32	8
3 "	8	14	12	6	-	8	87	30	24	38	26	10
4 "	-	-	-	-	-	4	4	2	-	-	-	-
Total 1961-72: 596	48	52	32	26	34	30	107	61	36	78	66	26

(b) COUNCIL DWELLINGS BUILT 1953-69.

	per 10,000 1953 population	as percentage of all dwellings built
* Dartford Town	514 °/ooo	51%
* Dartford Residential Rural District	703 °/ooo	23%
Northfleet Urban District	847 °/ooo	45%
Swanscombe Urban District	734 °/ooo	60%

See also next Table

* denotes each district population less 2,000 in long stay hospitals

(c) CONJECTURE ON HOUSING ADEQUACY 1961-72. Swanscombe U.D.

ANNUAL RECURRENT NEED: Dwellings are required on marriage and are vacated at death. The dwellings required by those assuming independence but not marrying are balanced by those who do not marry, but live as part of other households and by those who do not survive to marriage age. Thus the number of dwellings required each year is roughly half the annual number of births that occurred twenty years before, less half the current annual number of deaths. This assumes that those coming to live in the district will be balanced by those who move out.

Approx. average no. annual births, 1941-52:		150	
" " " " deaths, 1961-72:		90	
Annual no. dwellings needed to provide for natural increase of population: 150/2 - 90/2 = 30			
No. dwellings required in 12 years 1961-72: 12 x 30 =			360
No. " " to relieve shared accommodation of 1961 (see Table a):			89
Dwellings demolished and occupants rehoused:			
	Council owned:	100	
	Privately "	48	148
Total dwellings required 1961-72:			597
Houses provided 1961-72:			
	Council enterprise:	596	
	Private "	229	825

From the above, one would expect the waiting list for Council houses to have disappeared by 1972, but, as will be seen below, it has kept about constant and it may be that a trend to a younger marriage age in the 1960's is a contributory factor. It seems that, while keeping up with demand, the Council have not been able to meet the original need, i.e. have not been able to clear the 'backlog'. However, in the best of circumstances there must be a waiting list unless houses are allowed to remain empty pending occupation. The impression is that the waiting time has shortened. The above calculation is, of course, an over simplification.

(d) APPLICANTS FOR COUNCIL HOUSES. Swanscombe U.D.

The numbers re-registering for re-housing (not for transfer) have been:

Year	Young and Middle-Aged	Aged	Total
1966	293	28	321
1968	298	26	324
1970	336	24	360
1971	334	41	375
1972	277	21	298

About 10% are from persons living outside Swanscombe, but who wish to return here. The list of applicants in November, 1973, was as follows:

52	applicants who, at present, are sharing accommodation.
56	who are adequately housed.
28	who wish to be considered at a later date.
33	aged persons, already housed, but requiring aged accommodation.
51	who have their own home, but whose amenities are poor.
16	owner occupiers.
TOTAL 236	

(d) APPLICANTS FOR COUNCIL HOUSES, (Contd).

The numbers re-housed or of tenancies transferred have been:

1966	85	1970	133
1967	116	1971	165
1968	155	1972	77
1969	86		

About 80% of the above have been re-housed and about 20% have been transferred to other Council tenancies.

HOUSING PRIORITY ON MEDICAL GROUNDS: Swanscombe U.D.

Ten points are available with which to express medical priority. Five are used to express need on personal health grounds and five are used to express need on public health grounds. The former relates to helping the applicant to deal with some disability or help him towards recovery or to assist nursing or management of his case. Public health grounds relate to matters such as tuberculosis and the emotional environment of children.

APPLICATIONS FOR MEDICAL PRIORITY:

Year	TRANSFERS Points Awarded			RE-HOUSING Points Awarded		
	0	1-3	4-5	0	1-3	4-5
1968	-	4	1	3	5	-
1969	-	2	4	2	5	-
1970	1	7	-	2	10	1
1971	-	4	2	-	7	1
1972	-	3	-	1	7	7

By October, 1973, only 5 applicants with medical priority had not been re-housed.

CARAVAN SITES AND CONTROL OF DEVELOPMENT ACT:

Caravans Licensed:	1967	4	Exempted use under first schedule, occupied by persons employed on engineering works on site now removed.
	1968	Nil	
	1969	Nil	
	1970	5	Exempted use on Southfleet Road site for duration of civil engineering in connection with quarrying work.
	1971	5	As above.
	1972	5	As above.

Table XXXI Housing Provision in the 17 years 1953-1969

Local Authority	Population mid 1953	Population mid 1970	17 years Population increase			Dwellings built 1953-69					Dwellings put out of use for habitation					Increase in dwellings available		Increase in population mid 1953-mid 1970 per 100 additional dwellings available		
			Total mid 1953-mid 1970	Natural 1953-1969	Migration	Council enterprise: Built	Council enterprise: Boundary change 1957	Private enterprise	Boundary change 1957	Total	Unfit and demolished	Purchased by L.A. for re-development	Hutments demolished	Prefabricated bungalows demolished	Total	Number	Per 10,000 1953 population	Natural	Migration	Total
Dartford Town	38430	44260	5830	5478	+352	1611	+486	1909	+1	4007	397	about 20	0	6	423	3584	935	153	+10	163
Dartford Residential Rural District	36610	63000	26390	8880	17510	2933 (367 by Borough)	-486	7524	-1	9970	306	about 30	16	71	423	9547	2610	93	+184	277
Northfleet Urban District	19280	25600	6320	3493	2827	1636	-	2010	-	3646	204	271	3	0	478	3142	1630	111	+90	201
Swanscombe Urban District	8614	9430	816	1067	-251	633	-	417	-	1050	75	8	38	100	221	829	960	129	-30	99
Cols.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Dartford Town = Borough less 2000 persons in institutions
Dartford Residential Rural area = District " " " " "

TABLE XXXII HOUSING REPAIRS AND IMPROVEMENTS Swanscombe U.D.

IMPROVEMENT GRANTS:

	Standard	Total of Grants	Discretionary	Total of Grants
1967	47	£6,327.	11	£3,683.
1968	12	£2,508.	5	£1,805.
1969	16	£4,162.	3	£916.
1970	18	£4,691.	9	£4,245.
1971	16	£3,908.	31	£14,986.
1972	6	£2,191.	16	£12,178.

RENT ACT CERTIFICATES:

	1967	1968	1969	1970	1971	1972
Qualification Certificates	-	-	-	6	2	16
Provisional Qualification Certificates	-	-	-	2	-	-

HOUSES DEMOLISHED:

	1967	1968	1969	1970	1971	1972
Clearance Areas	6	4	-	4	4	15
Demolition Orders	-	-	-	-	6	-

Addresses of houses demolished:

28-36 Swanscombe Street,
1-10 Craylands Lane,
2, 4, 6 and 8 The Grove,
1-6 Flint Cottages,
New Barn Farmhouse and 1-5 New Barn Cottages.

UNFIT HOUSES MADE FIT:

	1967	1968	1969	1970	1971	1972
After informal action	20	26	18	29	21	26
After issue of Statutory Notices by L.A.	4	6	2	3	3	12

REPAIRS: The following are the details of repairs initiated by the Council's Public Health Inspectors:

	1967	1968	1969	1970	1971	1972
Ashbins provided	1	-	-	-	2	1
Ceilings repaired	3	2	-	2	3	3
Cesspools repaired or abolished	-	-	3	-	1	1
Chimney stacks repaired or rebuilt	-	2	-	1	3	3
Doors repaired or renewed	3	1	-	1	2	2
Drainage systems repaired	1	-	-	1	2	-
Eaves gutters repaired or renewed	2	3	1	2	5	2
Fascia boards repaired or renewed	-	-	-	-	2	3
Floors repaired or relaid	1	1	-	2	1	3
Rainwater downspouts repaired or renewed	1	2	2	2	2	1
Roofs repaired	7	4	6	3	6	14
Stoves repaired or renewed	1	-	1	-	1	1
Walls repaired	19	12	15	7	13	10
Water closets repaired	1	-	-	2	2	3
Windows repaired or renewed	5	2	7	2	10	9
Yard surfaces repaired or renewed	-	2	-	1	1	3
Staircases repaired	-	-	-	-	1	-
Sinks and waste pipes repaired or renewed	1	-	2	2	1	1
VISITS BY PUBLIC HEALTH INSPECTORS:	1,178	1,260	1,120	1,340	1,464	1,320

TABLE XXXIII IMPROVEMENT GRANTS

RATES PER THOUSAND HOUSES WITHOUT FIXED BATH AT 1961 CENSUS

Year	Standard grants (cumulative)	o/oo Houses no bath	Expend. £000 (cumulative)	o/oo Houses no bath	Discret. grants (cumulative)	o/oo Houses no bath	Expend. £000 (cumulative)	o/oo Houses no bath
Dartford R.D.								
1961	32	13 o/oo	3	1.2 o/oo	160	63 o/oo	36	14.2 o/oo
1962	74	29 o/oo	8	3.1 "	227	89 "	41	16.1 "
1963	122	48 o/oo	15	5.9 "	227	89 "	41	16.1 "
1964	180	71 o/oo	22	8.6 "	229	90 "	41	16.1 "
1965	257	101 o/oo	31	12.3 "	242	95 "	43	16.9 "
1966	304	119 o/oo	42	16.5 "	243	95 "	44	17.5 "
1967	378	148 o/oo	57	22.4 "	243	95 "	44	17.5 "
1968	460	181 o/oo	75	29.4 "	243	95 "	44	17.5 "
1969	557	219 o/oo	96	37.7 "	245	96 "	45	17.7 "
1970	600	236 o/oo	107	42.0 "	246	97 "	45	17.7 "
1971	666	262 o/oo	124	47.9 "	278	109 "	63	24.7 "
Dartford M.B.								
1961	25	14 o/oo	2	1.1 o/oo	82	46 o/oo	15	8.4 o/oo
1962	43	24 "	4	2.2	100	56 "	19	10.6 "
1963	59	33 "	6	3.4	121	68 "	24	13.4 "
1964	85	48 "	9	5.0	143	80 "	30	16.8 "
1965	106	59 "	11	6.2	164	91 "	38	21.3 "
1966	123	69 "	14	7.8	179	100 "	42	23.5 "
1967	147	82 "	17	9.5	204	115 "	52	28.1 "
1968	173	97 "	20	11.2	214	120 "	61	34.2 "
1969	213	119 "	28	15.7	219	123 "	64	35.9 "
1970	249	140 "	36	20.2	225	126 "	66	37.0 "
1971	300	168 "	44	24.6	232	130 "	68	38.0 "
Northfleet U.D.								
1961	15	10	1	0.1 o/oo	94	58 o/oo	17	10.5 o/oo
1962	27	16	1	0.1 "	119	73 "	21	12.9 "
1963	35	22	2	1.3 "	130	80 "	27	16.6 "
1964	42	26	3	1.9 "	146	90 "	31	19.1 "
1965	57	35	6	3.7 "	179	110 "	40	24.6 "
1066	76	47	8	4.9 "	210	129 "	47	28.9 "
1967	90	55	9	5.5 "	236	145 "	55	33.8 "
1968	103	63	11	6.8 "	269	166 "	66	40.6 "
1969	127	78	14	8.6 "	293	180 "	74	45.5 "
1970	151	93	16	9.9 "	312	194 "	80	49.2 "
1971	183	112	22	13.5 "	338	208 "	94	57.8 "
Swanscombe U.D.								
1961	11	15 o/oo	1	1.3 o/oo	44	58 o/oo	8	10.5 o/oo
1962	18	24 "	1	1.3 "	56	74 "	11	14.5 "
1963	25	33 "	2	2.6 "	64	84 "	13	17.1 "
1964	39	51 "	3	3.9 "	79	104 "	17	22.4 "
1965	57	75 "	5	6.6 "	88	116 "	19	25.0 "
1966	65	86 "	6	7.9 "	97	128 "	22	29.0 "
1967	93	123 "	11	14.5 "	102	134 "	23	30.1 "
1968	105	138 "	14	18.4 "	110	145 "	26	34.2 "
1969	119	157 "	23	30.3 "	116	153 "	29	38.2 "
1970	149	197 "	31	40.8 "	122	161 "	29	38.2 "
1971	183	241 "	34	44.7 "	129	170 "	33	43.4 "

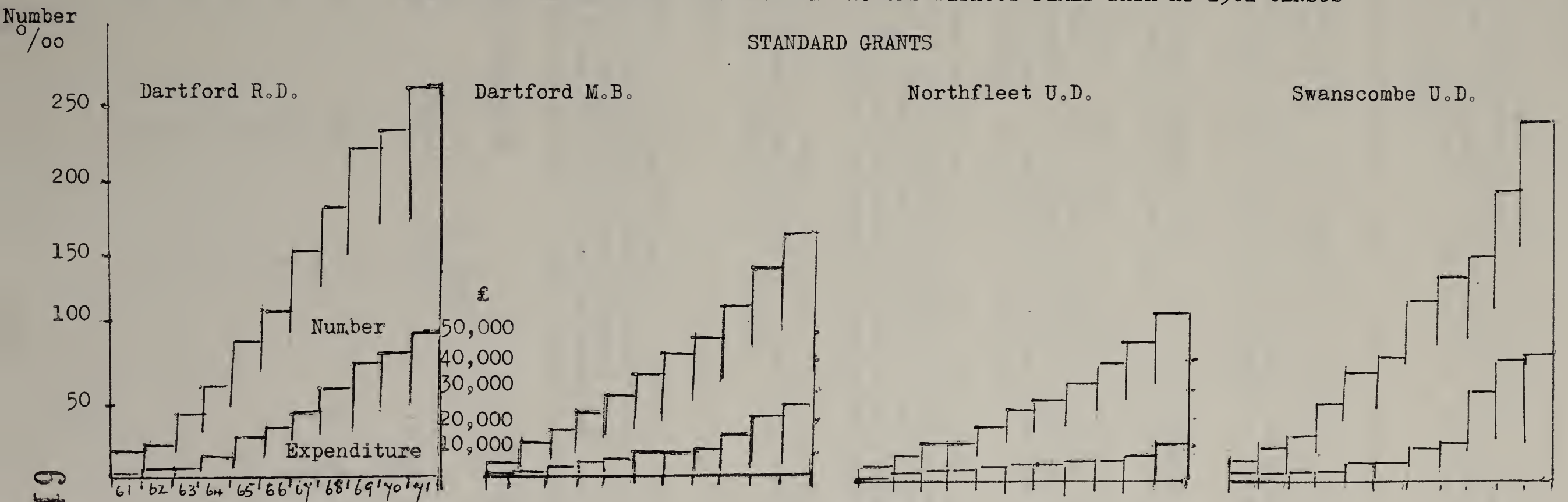
HOUSES WITHOUT FIXED BATH 1961

Dartford R.D.	2542	Northfleet U.D.	1626
Dartford M.B.	1783	Swanscombe U.D.	760

IMPROVEMENT GRANTS

NUMBER AND EXPENDITURE PER THOUSAND HOUSES WITHOUT FIXED BATH AT 1961 CENSUS

STANDARD GRANTS



DISCRETIONARY GRANTS

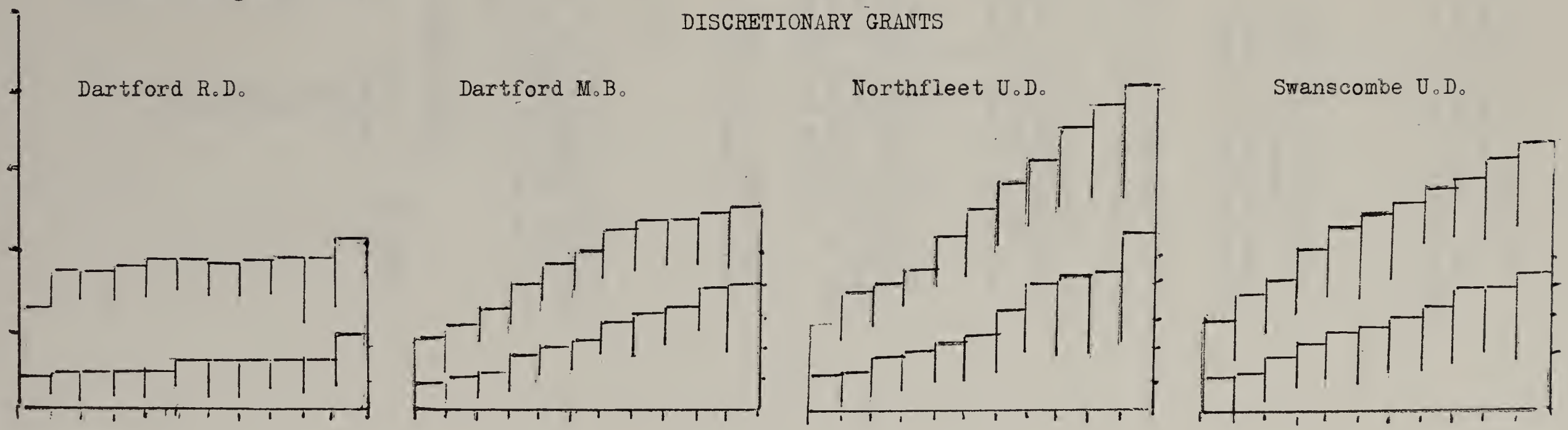


TABLE XXXIV WATER

WATER SUPPLY FOR DOMESTIC USE: The Metropolitan Water Board supply piped water to all the permanent dwellings in the Swanscombe Urban District.

The M.W.B. have no wells sited here, but the chalk below forms part of the gathering ground for their wells, the water from which is pumped into a grid supplying this and neighbouring districts. Their wells in Dartford Borough and Rural District are the main contributors to our supply.

QUANTITY: Supplies are at present abundant.

ACCESSIBILITY: All permanent dwellings have water piped into them. The water supply to H.M.S. Worcester is from M.W.B., by means of a flexible pipe above the river bed, from which water enters the main store tank, from whence it is pumped to three tanks on the forecastle head, thence to distribution points.

WATER FOR INDUSTRIAL USE: Water is abstracted in the area for manufacturing purposes and the following are the main industrial users:

(1) Empire Paper Mills - Two wells supply water for this factory. One situated in Bean Road, Greenhithe, and the other off Southfleet Road, Swanscombe. For domestic purposes supplies from these wells are chlorinated. The mills have also three test bores used to determine the chemical variation of the water.

(2) New Northfleet Paper Mills - Up to the closure about 1970, water used for manufacturing purposes at these works was obtained from two pumping installations situated in the Northfields quarry. A further well which was occasionally used is situated near the entrance to the works. Water for domestic purposes was provided by the M.W.B.

(3) A.P.C.M., Swanscombe Works - The domestic supply for these works is obtained from the M.W.B. Water for industrial purposes is pumped from one of their local quarries.

QUALITY: (a) Bacteriological Analyses

The details of the thousands of samples taken by M.W.B. for analysis from the raw water in their wells are given in the accompanying tables. In the remaining analyses referred to below, the number of E. coli type 1 per 100 ml. is used to summarise the information provided by sampling by Council's Public Health Inspectors.

H.M.S. Worcester

	No. of Samples	E. Coli Type 1.
1967	58	3
	2	3
	1	1
1968	66	0
	1	1
1969	65	0
	1	1
1970	70	0
	1	2
1971	71	0
	1	1
1972	66	0

Empire Paper Mills

	No. of Samples	E. Coli Type 1.
1967	30	0
1968	34	0
	1	2
1969	26	0
1970	36	0
1971	32	0
	2	1
1972	33	0

The Council's Swimming Pool:

Swimming pool water is liable to be contaminated with organisms coming from dust from footpaths and from the human nose, mouth, skin and bowel. The organisms swimmers leave behind are removed by filtration and breakpoint chlorination under the care of the Council's Engineer.

Bacteriological analysis of swimming pool water is done to ascertain the efficiency of filtration and chlorination on the pollution introduced by swimmers and other means. Counts of E. coli type 1 in 100 ml. measure pollution by bowel organisms. Plate counts measure pollution by skin, nose and other organisms. The aim is that no sample from a pool will contain E. coli type 1 in 100 ml. water and in 75% of samples the 24 hour plate count at 37°C. from 1 ml. water will not exceed 10 colonies and that in the remainder will not exceed 100 colonies. When the quality of the pool water falls below this standard, adjustments of filtration and chlorination are made to remedy matters.

The following table summarises the results of bacteriological analyses by the Public Health Laboratory Service of samples taken by the Council's Public Health Inspector.

Inlet (shallow end)	No. of Samples	E. Coli Type 1.	Plate Count 0	1-10	11-50	51-100	101+
1967	5	1	3	1	1	-	-
1968	4	0	4	-	-	-	-
1969	5	0	5	-	-	-	-
1970	4	1	4	-	-	-	-
1971	5	0	3	2	-	-	-
1972	5	0	4	-	-	1	-
Outlet (deep end)							
1967	5	1	4	-	1	-	-
1968	4	0	4	-	-	-	-
1969	5	0	5	-	-	-	-
1970	4	0	4	-	-	-	-
1971	5	0	3	2	-	-	-
1972	5	0	5	-	-	-	-

H.M.S. Worcester Swimming Pool:

The swimming pool at H.M.S. Worcester was closed in 1967, due to plant defects. No samples have been taken since and the pool is to be demolished due to building of the new Merchant Navy College.

(b) Chemical Analyses

The analyses carried out by the Metropolitan Water Board and by the County Analyist on samples taken by the Council's Public Health Inspectors are summarised in tables which follow.

TABLE XXXV M.W.B. WATER ANALYSES

Bacteriological Analyses. Sampling by Metropolitan Water Board.
Yearly Average.

RAW WATER

Well	No. of samples	Plate count per ml. 20-24 hrs. 37°C.	Plate count per ml. 3 days 22°C.	Coliform count per 100 ml. % negative	Coliform count per 100 ml. Aver. count	Escherichia coli count % negative	Escherichia coli count Aver. count
1967							
Southfleet	221	0.0	102	100.0	-	100.0	-
Dartford	247	0.1	2	100.0	-	100.0	-
Wilmington	250	1.5	4	98.8	-	100.0	-
Darenth	247	0.0	7	99.2	-	99.7	-
Green St.Green No.1.	177	0.0	5	93.8	0.1	96.7	-
Green St.Green No.2.	48	0.1	0	91.7	0.2	95.8	0.1
1968							
Southfleet	241	0.1	95	98.8	-	99.2	-
Dartford	221	0.1	21	100.0	-	100.0	-
Wilmington	250	1.8	47	89.6	0.1	94.6	0.1
Darenth	246	0.1	18	97.2	0.1	98.0	0.1
Green St.Green No.1.	199	0.1	5	93.5	0.6	94.5	0.6
Green St.Green No.2.	48	0.0	1	89.6	0.5	93.8	0.5
1969							
Southfleet	241	0.1	24	98.8	-	100.0	-
Dartford	245	0.4	4	100.0	-	100.0	-
Wilmington	238	0.5	46	98.8	-	99.6	-
Darenth	250	0.1	13	100.0	-	100.0	-
Green St.Green No.1.	168	0.1	3	94.0	0.1	97.6	0.1
Green St.Green No.2.	82	0.1	2	98.0	0.1	98.8	-
1970							
Southfleet	244	0.0	139	99.18	-	99.18	-
Dartford	244	0.1	34	100.0	-	100.0	-
Wilmington	248	0.7	43	98.79	-	100.0	-
Darenth	244	0.1	15	100.0	-	100.0	-
Green St.Green No.1.	153	0.1	2	96.08	0.1	97.39	-
Green St.Green No.2.	94	0.0	2	94.68	0.2	95.74	0.1
1971							
Southfleet	245	0.2	74	98.78	0.1	100.0	-
Dartford	248	0.0	14	99.60	-	99.60	-
Wilmington	248	0.8	74	97.18	0.2	100.0	-
Darenth	250	0.0	14	99.20	-	100.0	-
Green St.Green No.1.	144	0.0	2	96.53	0.1	97.92	-
Green St.Green No.2.	107	0.0	7	94.39	0.1	97.20	-
1972							
Southfleet	250	0.4	28	98.40	6.4	100.0	-
Dartford	251	0.5	55	99.60	0.1	100.0	-
Wilmington	229	1.1	40	99.13	-	100.0	-
Darenth	251	2.3	20	100.0	-	100.0	-
Green St.Green No.1.	149	0.1	22	97.99	-	98.66	-
Green St.Green No.2.	97	0.1	41	97.94	-	98.97	-

TREATED WATER - A slightly smaller number of samples of treated water from each of the above wells have been taken each year. None showed any E coli in 100 ml.

Chemical Analyses. Sampling by Metropolitan Water Board. Average Results.

		No. of Samples	Ammonia Nitrogen p.p.m.	Albuminoid Nitrogen p.p.m.	Nitrate Nitrogen p.p.m.	Oxygen absorbed in 4 hrs. at 27°C.	Hardness Total p.p.m.	Hardness (non-carb) p.p.m.	Chlorides as Chlorine p.p.m.	pH	Natural Fluoride as Fluorine p.p.m.	Megohms
1967	Southfleet	4	0.005	0.024	7.4	0.08	309	54	18	7.1	0.15	580
	Dartford	4	0.003	0.034	4.3	0.12	272	50	22	7.3	0.15	540
	Wilmington	4	0.008	0.037	7.3	0.15	286	54	26	7.3	0.20	590
	Darenth	4	0.009	0.033	4.7	0.10	270	46	18	7.3	0.15	510
	Green St.Green	8	0.012	0.033	6.4	0.06	289	45	17	7.1	0.10	540
1968	Southfleet	4	0.005	0.019	7.1	0.08	307	53	21	7.2	0.15	540
	Dartford	4	0.007	0.024	4.2	0.15	275	53	21	7.2	0.15	520
	Wilmington	4	0.010	0.026	6.5	0.21	296	65	26	7.3	0.15	550
	Darenth	4	0.009	0.025	4.6	0.12	272	46	18	7.3	0.15	500
	Green St.Green	8	0.008	0.025	5.9	0.09	283	44	19	7.3	0.10	530
1969	Southfleet	4	0.010	0.027	7.5	0.06	312	63	20	7.2	0.08	540
	Dartford	4	0.005	0.028	4.8	0.18	282	63	21	7.3	0.15	510
	Wilmington	3	0.011	0.033	7.6	0.12	295	70	27	7.3	0.15	560
	Darenth	4	0.006	0.016	4.6	0.12	276	54	18	7.4	0.15	490
	Green St.Green	8	0.008	0.018	6.4	0.06	296	52	19	7.1	0.10	520
1970	Southfleet	11	0.006	0.016	6.7	0.00	310	51	21	7.4	0.10	560
	Dartford	4	0.005	0.019	5.2	0.13	280	56	24	7.3	0.15	510
	Wilmington	4	0.005	0.022	7.5	0.13	295	65	29	7.2	0.15	540
	Darenth	4	0.004	0.028	4.8	0.11	270	44	18	7.2	0.10	480
	Green St.Green	8	0.005	0.020	6.3	0.06	289	43	19	7.2	0.10	510
1971	Southfleet	4	0.005	0.013	7.9	0.08	306	59	21	7.1	0.10	570
	Dartford	4	0.006	0.026	5.2	0.06	281	65	21	7.3	0.10	550
	Wilmington	4	0.020	0.029	9.0	0.19	295	74	28	7.4	0.15	560
	Darenth	4	0.009	0.021	6.2	0.11	285	60	21	7.2	0.10	550
	Green St.Green	8	0.006	0.017	7.4	0.05	283	46	18	7.1	0.10	540
1972	Southfleet	4	0.004	0.015	9.4	0.08	309	48	20	7.2	0.09	560
	Dartford	4	0.003	0.019	5.4	0.14	281	60	21	7.4	0.11	530
	Wilmington	4	0.006	0.015	9.5	0.26	290	53	25	7.2	0.10	550
	Darenth	4	0.000	0.015	5.9	0.12	268	43	17	7.3	0.11	500
	Green St.Green	8	0.002	0.015	8.2	0.08	288	44	19	7.2	0.10	530

TABLE XXXVII NITRATE NITROGEN IN WELL WATERS. DARTFORD AND DISTRICT
Parts per million

The World Health Organisation regards 12 p.p.m. as a level which when exceeded implies a possibility of infantile metahaemoglobinaemia.

Dartford Borough

West Hill Hospital		
51 samples	1953-69	6-14
	1970 Mar.	15
	Nov.	7.5
	1971 Jan.	8
J & E. Hall		
Works	1953 Feb.	3
Victoria Road	1957 Feb.	14.3
Hythe Street	1958 Oct.	8
	Oct.	14
Dartford Paper Mills		
Well C	1954 Mar.	11
Shed 5	1954 Mar.	8
3 throw pump	1954 Mar.	5
-do-	1954 Jan.	7
69 Priory Road	1952 Mar.	9
(One of 7 houses supplied by the Paper Mills-now changed to M.W.B.)		

Bexley Hospital		
	1963 Mar.	6
London Paper Mills		
No. 2 bore	1953 Jun.	6
No. 3 "	1955 Jan.	7
No. 1 "	1956 Feb.	3
No. 1 "	1965 Jun.	3
No. 1 "	1965 Jun.	6
Greaseproof Paper Mills		
	1956 Feb.	10
Burroughs Wellcome		
No. 3 bore	1952 Jun.	12.5
No. 1 "	1953 Feb.	2
Stanham Farm	1952 Feb.	6
	1954 May	7
	1954 Nov.	7
	1958 July	10
	1958 Sept	7
	1958 Nov.	9

Dartford Rural District

Parish of Horton Kirby or vicinity		
Paper Mills	1957 Aug	6
	1957 Oct	4
Court Lodge Farm		
	1948 Feb	7
	1948 July	6
	1949 Apr.	13
	1949 Jun	6
	1949 Dec	17
	1949 Dec	17
	1950 May	
Parish of Sutton-at-Hone or vicinity		
Clement Street		
Ayre's Cottages, 2 wells*		
	1949 Mar.	10.0
	1949 Sept.	7
	1949 Nov.	3
	1950 Jan.	9.0
	1950 Jan.	9.0
	1950 Jan.	5.0
	1951 Aug.	12.5
	1952 Sept	3.0

Devon Cottages*	1948 Aug.	12.5
Court Lodge Farm (continued)		
	1951 Sept.	16.7
	1948 Feb.	8
	1949 May	17
	1949 Aug	10
	1949 Oct	10
	1950 May	7.0
Ayre's Cottages (continued)		
	1954 Jun	10.0
	1954 Jun	10.0
	1956 Aug	12.5
	1956 Aug	11.1
	1957 Mar	8.0
	1957 Mar	11.1
	1957 July	7.0
	1957 July	7.0

*Well no longer in use.

TABLE NITRATE NITROGEN IN WELL WATERS. DARTFORD AND DISTRICT (continued)

Parts per million

Dartford Rural District (continued)

Parish of Sutton-at-Hone (continued)

Clement Street (continued)

Ayre's Nursery

1956	Aug	10.0
1957	Mar	8.0
1957	July	7.0

Clement House, Sutton Cottages, Northview*

1949	April	8
1948	Aug.	4
1949	Mar	10
1949	Aug	10
1951	Aug	10.0
1949	May	4
1949	Nov.	3
1950	Jan	7.0
1954	Aug	8.0
1957	Mar	8.0
1957	July	5.0

The Ferneries*

1949	Dec	8

Fenn's Cottages *

1949	Nov.	4
1950	Jan.	9.0
1950	Aug.	8.0

Whiffen's Cottages *

1949	Mar	10
1949	Nov	8
1956	Aug	8.0
1957	Mar	8.0
1959	July	6.0

Orchardside**

1949	Apr	7.0
1954	Jan	7.0
1950	Jan	6.0
1956	Aug	12.5
1957	Mar	10.0
1957	July	4.0

Thomas's Nursery

1948	Feb	11

Parish of Stone

Stone House Hospital*

1953	Feb	15
1953	May	7.0
1953	July	7.0
1954	June	20

Stone Court Works

1949	Jan	10
1949	Aug	7

Brickfield Cottages*

1948	Nov	11.0
1949	May	8
1949	July	5
1950	Jan	8.0
1950	Sept	6.0
1951	Oct	1.0

Claypit Well, Bean*

1950	June	2.0 (Shellbank)+
1949	July	9.0
1957	Aug	5
1951	Mar	6.0 (Shellbank)+
1948	June	1 (Shellbank)+

+mixed with rainwater

Parish of Darenth

Darenth Park Hospital

1951	July	6.0
1951	July	7.0(mixed with MWB)
1965	Aug	4.5
1971	Nov	2.0

Darenth Mill

1950	Oct	2.0
1951	Nov	4.0
1957	Aug	6
1957	Oct	3

Parish of Eynsford

Lullingstone Castle

1948	Nov	7
1950	May	6
1950	Dec	4.0
1951	June	5.0
1951	July	6.0
1951	July	5.0
1952	Sept	1.0
1963	July	3
1965	Aug	0
1966	Aug	5
1968	Apr	5.0

*well no longer in use

**well no longer in use for human consumption

TABLE NITRATE NITROGEN IN WELL WATERS. DARTFORD AND DISTRICT (continued)
Parts per million

Swanscombe U.D.

The Empire Paper Mills are supplied by two wells at Cobham Terrace and one at Southfleet Road. The precise well from which water has been sampled is not always certain.

1952	January	4.0
1953	July	10
1954	April	8
1956	November	4
1956	December	8.4 (Cobham Terrace well)

Water Authorities

The annual averages for samples from wells of the water authorities are given in the attached table.

The individual readings on which certain M.W.B. high averages were based were:

Wilmington	1961	Feb	8.0
		May	9.0
		Aug	10.0
	1962	Feb	9.0
		May	8.0
		Aug	10.0
		Nov	10.0
Green Street Green	1960	Mar	6.0
		May	6.5
No.1 well		Sept	7.5
No.2 well		Sept	7.5
		Dec.	8.0
No.1 well	1961	Mar	not determined
No.2 "		Mar	5.5
No.1 "		June	8.0
No.1 "		Sept	8.0
No.2 "		Sept.	7.0
No.1 "		Dec.	7.0

Southfleet	1967	Feb	7.0
		Apr	8.0
		Aug	7.4
		Nov	7.0
	1968	Feb	6.5
		Aug	6.5
		Nov	6.7
		Dec	8.7
	1969	Feb	8.0
		May	6.4
		Aug	6.9
		Nov	8.1

Certain of the above readings are given to one place of decimals others to the nearest whole number hence the variation in presentation.

TABLE XXX- CHEMICAL RESULTS NITRATE NITROGEN

Individual wells of water undertakers VIII

Nitrate nitrogen p.p.m.average readings of each year

Rawwater except where otherwise stated Well	Average nitrate nitrogen										Number of samples on which each average is based									
Met.Water Board	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Darenth	5.5	4.5	5.3	4.8	5.1	5.0	4.6	4.7	4.6	4.6	6	4	4	5	4	4	4	4	4	4
Dartford	5.2	4.6	4.0	4.1	4.9	4.0	3.7	4.3	4.2	4.8	5	4	4	4	4	4	4	4	4	4
Eynsford	4.1	4.1	3.7	3.7	4.2	3.6	3.9	4.0	3.8	4.7	7	8	8	7	8	8	8	8	8	8
Green St.Green	7.1	7.1	6.6	6.3	6.3	5.3	6.0	6.4	5.9	6.4	5	6	7	8	8	7	5	8	8	8
Horton Kirby	4.5	4.8	4.2	4.4	4.8	4.5	4.3	4.8	3.8	4.7	6	8	8	8	8	8	8	8	8	8
Southfleet	6.2	5.1	6.0	5.6	6.6	6.1	6.4	7.4	7.1	7.5	3	4	4	4	4	4	5	4	4	4
Wilmington	7.8	9.0	9.3	6.9	8.3	6.9	7.5	7.3	6.5	7.6	3	3	4	3	6	4	4	4	4	3
Lullingstone	-	-	-	3.4	4.0	3.1	3.2	4.0	3.6	4.5	-	-	-	6	8	8	8	8	8	8
Medway Water Board																				
Fawkham well(tr.+raw)		5.1	5.2	4.9	5.3	5.0	4.4	4.5	4.0	4.0	-	5	3	6	4	4	5	5	7	6
Northfleet well(a)	-	-	-	4.6	5.0	5.1	4.9	4.6	4.9	4.5	-	-	-	5	4	4	3	4	5	7
" " (b) (b = treated)	-	-	-	5.5	5.2	5.0	4.9	5.5	5.7	6.6	-	-	-	3	4	2	3	3	4	4
Mid Kent Water Co.																				
Hartley Pumping Station (treated & raw)	5.0	5.0	5.3	5.3	5.6	6.5	4.7	4.4	4.7	4.8	4	2	6	2	3	1	7	3	6	6
Stansted Pumping Station	-	-	-	-	-	-	2.9	2.7	-	-	-	-	-	-	-	-	4	1	-	-

TABLE XXXIX DRAINAGE

DWELLINGS: With few exceptions, all the dwellings of this district were on main drainage. In 1972 there were 2,936 drained to Swanscombe sewage works, 234 drained to the former Stone sewage works, the sewage thence being pumped to the West Kent main sewage works, and 56 drained to Northfleet sewage works, (new terminology - "water pollution prevention works"). All 435 dwellings built in the period 1967-1972 were connected to the sewer. At the end of 1972, the position was:-

Dwellings drained to sewer	approx. 3,226
" " " septic tanks	0
" using cesspools	28
" " pail closets	0

FACTORIES: The Inveresk Paper Mills, which were cesspool drained, closed during 1971. The site is now, 1973, being re-developed for warehousing and industrial use and pumping plant is being installed to lift the sewage to a level which will enable it to gravitate to the Council's sewage works on Swanscombe marshes. The Council propose to extend their sewer to facilitate this operation and to contribute towards the cost of the pumping plant. The scheme will also provide for other works to be included. Work is in progress and completion will be about June, 1974. Swanscombe will then be practically all main drained. The remaining premises on cesspools are small and isolated, or at such level that it is not possible to gravitate to main sewers. At the end of 1972, the position was:-

Factories on main drainage	26
" " own sewage disposal unit	2
" " septic tanks	0
" using cesspools	3
" " pail closets	0

The following was initiated by the Council's Public Health Inspectors:-

	1967	1968	1969	1970	1971	1972
Pail closets abolished	3	-	-	-	-	-
Cesspools repaired or abolished	-	-	3	-	1	1
Visits regarding cesspools	5	2	4	4	2	4
Drains repaired or reconstructed	1	-	-	1	2	-
Drains tested	80	92	40	46	46	66
Drainage inspections	85	89	51	55	48	65
Inspection chambers repaired	4	-	1	1	3	1

SEWAGE DISPOSAL WORKS: The following summarises analyses of the effluent:-

Sampled by Port of London Authority (averages in parts per million)						
Suspended matter	48.6	41.4	35.2	50.4	44.4	39.4
Albuminoid nitrogen	4.0	5.0	4.1	3.2	4.0	4.6
Oxygen absorbed in 4 hours	20.4	20.0	15.7	14.1	18.1	18.5
Oxygen absorbed 5 days (BOD)	38.8	39.8	30.1	24.9	42.3	34.6
No. samples taken	24	21	14	14	6	10

Sampled by Council's Public Health Inspectors and analysed by County Analyst:-

Suspended matter	42.1	48.6	43.6	33.7	38.8	26.0
Albuminoid nitrogen	3.3	2.6	3.6	1.6	2.3	1.5
Oxygen absorbed in 4 hours	14.7	16.8	18.0	17.7	9.5	15.8
Oxygen absorbed 5 days (BOD)	36.6	39.1	34.2	34.0	37.9	25.0
No. samples taken	12	12	12	12	12	12

Standards vary with local circumstances, but as a general guide effluents should have less than 31 p.p.m. suspended matter and 21 p.p.m. BOD.

TABLE XXXIX - DRAINAGE (continued)

STANDARDS FOR SEWAGE EFFLUENTS ENTERING R.THAMES (1933)

	Limits
Teddington to London Bridge	30 ppm suspended matter 20 ppm dissolved O_2 absorbed in 5 days
London Bridge to 20 mile pt Long Reach	Alb.ammonia 5.0 ppm O_2 absorbed in 3 hrs at 37°C 50.ppm
20 mile pt Long Reach to Lower Hope	Alb.ammonia 7.0 ppm O_2 absorbed in 3 hrs at 37°C 70 ppm.

THE RIVER THAMES

"In order to improve the condition of the Thames it is essential that a high reserve of dissolved oxygen be maintained in the river. The maximum amount of oxygen that can be dissolved into a given quantity of water is termed the 100% saturation value and the Port of London Authority have set a target of a minimum oxygen content of 10% saturation in all places and at all times in the tidal Thames to be achieved by 1980". At Long Reach within the boundary of this district the tidal Thames has it lowest oxygen content.

Long Reach		Dissolved oxygen (per cent saturation) Averages		
Flow 250 mgd	Teddington	1893	Third quarter	25% approx
"	"	1900-05	" quarters	25% "
"	"	1920-29	" "	8% "
"	"	1930-39	" "	6% "
"	"	1940-49	" "	5% "
"	"	1950-59	" "	0% "
1848	"	1968	year	15% "
1420	"	1969	"	18% "
1170	"	1970	"	12% "

The contributions in this area to the improvements of the 1960's included the reconstructions of the Crossness sewage works, the extension of sedimentation plant at the West Kent Main Sewerage Board Works, the closure of the small inefficient sewage works at Stone, the improvement of the small works at Swanscombe.

From 1964 onwards fish were periodically caught by the screens of Littlebrook and West Thurrock Generating Stations.

The improved oxygenation of the river appears also to be amenable to the organisms of the soil and intestine arriving in the effluents from the sewage works along the banks of the tidal Thames.

P.L.A. survey of River Thames 6. 10. 69

	Coliforms per 100 ml.	E coli per 100 ml.	Salmonellae per litre	Salmonellae isolated
		Samples at high water		
Southend	8	3	0	
Gravesend	130	80	3	Enteritis + unnamed
Long Reach	14000	3000	13	Bredeney
Halfway Reach	25000	8000	13	Bredeney,Newport
Barking Reach	17000	8000	725	Bredeney
Woolwich	30000	5000	725	Bredeney,Reading
Limehouse	25000	5000	13	Typhimurium, Dublin
Lower Pier	11000	1000	5	Typhimurium
Chelsea	50000	20000	3	Brandenburg
		Samples at half flood		
Corney Reach	13000	1000	13	Paratyphi B.Typhimurium,Stanley New-haw
Syon Reach	90000	1000	5	Typhimurium.Fischerkietz

FOOD PREPARATION: Food premises inspected by the Council's Public Health Inspectors were:

	1967	1968	1969	1970	1971	1972
Bakehouses	2	2	2	2	2	2
Butchers	8	8	8	7	7	6
Cafes, canteens, etc.	9	10	10	10	10	10
Confectioners	10	10	9	9	9	9
Fish fryers and fishmongers	2	2	2	2	2	2
Greengrocers	10	10	10	10	10	10
Grocers	30	29	28	28	28	28
Ice cream premises	30	26	26	22	17	17
Licensed premises	20	20	19	19	18	18
The number of inspections were:	181	177	164	186	153	162

The figure for ice cream premises is the number of premises registered, most of which were also the premises of grocers and confectioners.

REGISTERED PREMISES: Section 16 of the Food & Drugs Act, 1955, requires certain premises to be registered.

Those registered were:

Sausage making and cooked meats	-	-	-	2	1	-
Sale and storage of ice cream	4	-	-	-	-	-
Manufacture and sale of ice cream	-	-	-	-	-	-

Those on the register each December were:

Sausage making and cooked meats	1	1	1	3	4	4
Sale and storage of ice cream	36	30	26	20	16	16
Manufacture of ice cream	1	1	1	1	1	1

The following were the remedies effected:

Surfaces made suitable	7	9	5	8	4	2
Clothing made clean	-	4	-	2	3	-
First aid boxes renewed	3	-	8	7	4	4
Sanitary accommodation cleansed	-	1	4	-	1	2
" " repaired	1	-	1	2	3	-

Notices were served, where necessary.

MILK: Regulations require this Council to register (a) dairies not being dairy farms and (b) distributors, i.e. dairymen other than dairy farmers.

The following are the figures for registrations:

Dairies registered	-	-	-	-	-	-
Distributors registered	21	21	21	21	21	21

Milk sold must be designated and distributors must be licensed by the Food and Drugs Authority to use the designation. Licenses issued for the 5 year period commencing 1st January, 1970, were:

Pasteurised:Sterilised:Ultra heat treated	-	15
Ultra heat treated	-	2
Ultra heat treated:Sterilised	-	4

TABLE XL FOOD HYGIENE, (contd).

FOOD REGARDED AS UNFIT FOR CONSUMPTION:

Seizure of suspected food by the Council's Officers: Nil.

Surrender of suspected food by traders:

	1967	1968	1969	1970	1971	1972
Meat and Fish (lbs).	69	45	39	20	37	89
Other Foods "	36	10	5	87	260	112

Submission of unfit food by customers:

1968 Peanut butter contaminated with glass. Warning letter sent to manufacturer.

1970 Soft drinks contaminated by foreign matter. Faggot contaminated by cigarette end. Manufacturers warned in both cases.

1971 Chocolate cigarette sweets infested with weavil. These sweets were imported and all attempts to locate manufacturers failed. The importing firm were, therefore, sent a warning letter.

1972 Sweet bread contaminated with oil.
Bottled milk contaminated with flies.
Packeted nuts and raisins infested with maggots.
Mouldy packet of butter.
Packet of sponge mixture infested with bread beetle.
Warning letters sent in each case.

Sampled by County Sampling Officers:

1970 Mouldy pork pie. Fined £8.00, £3.15 costs.

LABORATORY EXAMINATIONS:

Ice cream samples obtained by the Council's Public Health Inspectors and examined for cleanliness by the methylene blue test at the Public Health Laboratory were:

Methylene blue decolourised in:	Prov. Grade*	1967	1968	1969	1970	1971	1972
Over 4 hrs. at 37°C.	I	84	73	62	56	45	33
2½-4 hrs. at 37°C.	II	3	4	5	-	7	10
0-2 hrs. at 37°C.	III	1	-	1	-	-	-
Pre-incubation period (17 hrs. at 20°C).	IV	-	1	-	-	4	1
		88	78	68	56	56	48

Soft Drinks:

1967 7 samples taken for preservative quality. No contravention.

1968 7 " " " " " No contravention.

1969 10 " " " " " No contravention.

1970 15 " " " " " No contravention, but 4 samples contained foreign matter. Manufacturing plant closed down in 1971 following a fire.

* Suggested standard. About 50% of samples to fall into Grade I, 80% into Grades I or II, not more than 20% into Grade III and none into Grade IV.

TABLE XLI FOOD CONTENT

SAMPLING: Samples taken by the County Sampling Officers within the Swanscombe District during the years 1967-1972 were as follows. The samples were taken by County, as this Urban District is not a Food and Drugs Authority.

	1967	1968	1969	1970	1971	1972
Milk	8	8	8	7	2	6
Drugs	4	4	4	3	2	2
Spirits, etc.	3	3	3	2	2	2
Other samples	16	14	15	10	15	14

Of the above samples all were satisfactory except:

1968	Strawberry jam. Fragmented bee.	Manufacturer cautioned.
1969	Garden peas. Below required standard of fill.	Packers notified.
1970	Senna pods. Water soluble extract below required standard. Stocks withdrawn.	No further action.
"	Pork pie - See Unfit food.	
"	Low sugar chunky orange marmalade. Not labelled clearly as a diabetic product.	Manufacturer agreed to revise label.
"	Limeade. Saccharin content above legal standard.	Stock exhausted. No further action.
1971	Prescription. Below the required standard of chloroform. Follow-up sample satisfactory.	Retailer advised as to storage of volatile preparations.
"	Pork sausages. Deficient in meat.	Fined £25.00. with £5.00 costs.

Note: In regard to Tables XL and XLI, affairs relating to the fitness of food are included in Food Hygiene and affairs relating to quality are included in Food Content. The distinction is desirable as, briefly, unfit food may cause loss of health, whereas poor quality food causes loss of money, e.g. unfit food = lead in cider; poor quality food = water in milk.

FACTORIES ACT: The Council enforces the provision of sanitary conveniences in all factories. In factories without mechanical power, the Council also enforces the provision of adequate cleanliness, temperature, ventilation and drainage and freedom from overcrowding.

	1967	1968	1969	1970	1971	1972
Factories without mechanical power	4	2	-	-	-	-
Factories with mechanical power	27	27	28	25	26	26
Other premises, e.g. building sites	4	-	2	2	1	2
Inspections	50	86	70	85	46	35
Defects found	27	18	30	10	12	6
Notices served	27	16	25	8	8	2
Outworkers in Swanscombe U.D.	5	2	4	2	5	5

OFFICES, SHOPS AND RAILWAY PREMISES ACT: Visits under this Act are for enforcement of provisions relating to cleanliness, overcrowding, temperature, ventilation, lighting, conveniences, washing facilities, drinking water, accommodation for clothing, seats for sedentary workers, eating facilities, fencing of machinery and first aid.

No. premises registered	53	53	55	55	53	55
No. receiving general inspection	53	53	55	55	53	55
No. of visits by Public Health Inspectors	140	118	133	100	153	83
No. of defects found	27	17	8	4	6	12
Premises inspected:						
Offices	16	16	17	17	17	17
Shops with employees and subject to Act.	35	35	36	36	35	37
Warehouses	1	1	1	1	-	-
Canteens	-	-	-	-	-	-
Fuel storage depots	1	1	1	1	1	1

SHOPS ACT, 1950: On 31st March, 1972, there were some 103 shops and 13 public houses in Swanscombe. The total number of inspections for the purpose of ensuring compliance with this Act were:

	89	78	84	100	153	118

TABLE XLIII DISINFECTION, DISINFESTATION AND RODENT CONTROL

DISINFESTATION: The following were the number of occasions when advice was given or disinfestation carried out:

	1967	1968	1969	1970	1971	1972
Wasps	8	2	4	6	3	8
Maggots and flies	3	1	2	-	2	-
Bed bugs	-	1	1	-	2	4
Bees	4	2	3	1	4	2
Fleas	-	1	-	1	2	4
Beetles	2	-	4	1	3	6
Woodworm	-	2	-	-	1	-
Ants	4	6	-	2	-	5
Crickets	-	1	-	-	-	-

RODENT CONTROL: Total number of properties (incl. nearby premises) inspected following notifications:

Total:	76	55	66	85	145	87
No. infested by i). rats	51	33	24	30	66	44
ii). mice	25	22	42	55	79	43
No. premises inspected other than by notification:	37	14	138	120	153	37
No. infested by i). rats	10	4	5	6	2	-
ii). mice	2	5	9	8	1	-

TABLE XLIV

Radioactive Substances Act, 1960,

CERTIFICATES OF REGISTRATION UNDER SECTIONS 1 and 3.

Date Registered.	Premises	Radioactive Substance	Millicuries	Use Began	Revoked
27.6.63.	New N'fleet Paper	Thallium 204.	125	1.12.63.	23.4.65.
25.7.63.	Br. Veg. Parchment	" "	50	1.12.63.	
14.8.63.	Kent Kraft	" "	55	1.12.63.	14.1.70.
28.8.63.	Paper Sacks,Ltd.	" "	15	1.12.63.	13.7.70.
22.4.65.	New N'fleet Paper	" "	150	23.4.65.	31.3.69.
2.6.65.	Empire Paper	" "	25	3.6.65.	7.4.67.
7.4.67.	" "	" "	25	7.4.67.	27.3.68.
	" "	Krypton 85	400		
	" "	Tritium	3		
26.3.68.	Reed Paper Group for Empire Paper	Thallium 204	25	27.3.68.	18.11.69.
		Krypton 85	400		
		Tritium	3		
14.5.68.	Empire Paper	American 241	1,200	15.5.68.	13.8.68.
28.3.69.	New N'fleet Paper	Thallium 204 or Strontium 90	5		
22.10.69.	A.P.C.M.Wash Plant	Caesium 137	310	23.10.69.	6.8.70.
17.10.69.	Reed Paper Group for Empire Paper	Thallium 204	25		
		Krypton 85	150		
		Tritium	66		
13.1.70.	Kent Kraft	Thallium 204	40	14.1.70.	
		Krypton 85	60		
10.7.70.	Robinson Sacks	Thallium 204	40	13.1.70.	
5.8.70.	A.P.C.M.Wash Plant	Iron 55	30	6.8.70.	
		Caesium 137	410		
18.8.70.	Reed Paper & Board	Thallium 204	25	18.8.70.	
		Krypton 85	150		
		Tritium	66		
8.1.71.	New N'fleet Paper	Thallium 204 or Strontium 90	150 10	11.1.71.	14.5.71.

ATOMIC OR HYDROGEN BOMB TESTS:

For reference in interpreting graphs on radioactivity of rain:

1958 Test high northern lattitude.
1961 " " " " .
1962 Test Pacific and northern lattitudes.
1963 TEST BAN TREATY. Suspension of weapon tests.
1964 Nuclear device detonated by Chinese, Central Asia.
1966 Three Chinese tests in Central Asia.
1967 Two " " " " "
1968 Five French tests in the S. Pacific.
1968 One Chinese test in Central Asia.
1969 One " " " " "
1970 One " " " " "
1970 One French test in S. Pacific.

Radioactive waste from major nuclear power stations

Local authorities must be consulted before authorisationsfor the disposal of radioactive waste are granted in respect of major nuclear establishments and joint authorisation is required from both the Minister of the Environment and the Minister of Agriculture,Fisheries and Food.

In 1968 Dartford R.D., Dartford M.B. and Kent C.C. were consulted by the two Ministries and the Secretary of State for Wales on an application from the Central Electricity Generating Board for the disposal of radioactive waste oil by burning it in the oil-fired furnaces of Littlebrook Power Station. Such radioactive waste oil arises from leakage from oil seals in contact with coolant gases of reactors of nuclear power stations. Each such station incurs a waste of about 15000 gallons of such oil a year containing upto 10 curies of tritium and upto 1 curie of other radionuclides.

The proposal was for Littlebrook to burn the contaminated oil from three nuclear power stations one of which might be in Wales. Thus the oil to be burnt would contain upto 30 curies of tritium and upto 3 curies of other radionuclides. The Ministers and the Secretary of State were satisfied that the burning of such oil in such quantities would not cause hazard to public health. Emissions from the stack would contain concentrations well below the maximum recommended by the international commission and at ground level the concentration would be even less. In the ash the concentration would be so low as to require no special precautions. Transport of the oil to the power station by road would involve no special risk in the event of accident. Owing to the dispersal of the flue gases and the ash there would be no build-up of radioactivity.

Check measurements would be made.

Local calculations so far as one's limitations allowed gave conclusions in harmony with the observations of the Ministry.

The 3 curies of radioactive nuclides other than tritium would be from one or more of the following activation products: sulphur 35, calcium 45, chromium 51, manganese 54, iron 55, iron 59, cobalt 60, zinc 65, silver 110m., antimony 124 and mercury 203. There may be some fission product and alpha contamination under abnormal circumstances such as a leaking fuel element in the reactor but activation products would generally predominate.

Authorisation was issued on 26th June 1968.
The conditions for accumulation were that:

(a) the waste is stored in the tanks used for the storage of fuel oil in bulk;
(b) the waste is disposed of as soon as practicable.

The conditions for disposal were that:

(a) the waste is mixed with fuel oil which is not radioactive and burnt therewith in the furnaces;

(b) the waste disposed of does not exceed in one year 30 curies of tritium and 3 curies other radionuclides;

(c) the Board takes samples of the waste and if so directed causes such samples to be examined, retained and the results recorded.

During 1969 the waste oil burnt at Littlebrook Power Station contained only 5.2 millicuries of tritium and 8.8 millicuries of other radionuclides. At certain other power stations burning oil with similar levels of activity measurements had shown that the burning of the contaminated oil had no detectable effect on the environment. Consequently as there was so little activity in the oil burnt at Littlebrook Power Station similar checks on the environment were not considered necessary.

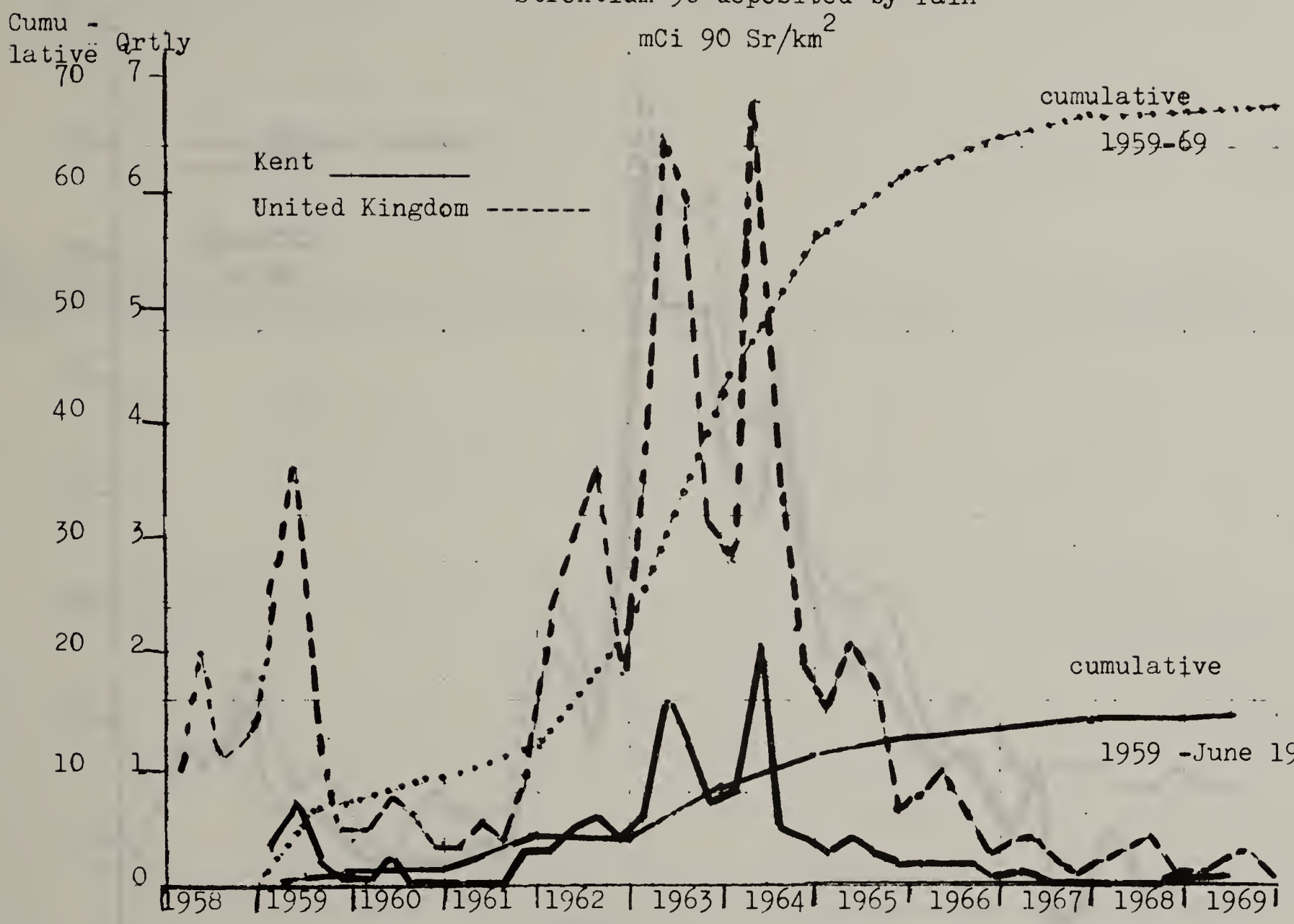
TABLE XLV

RADIOACTIVITY

RAIN

Strontium 90 deposited by rain

mCi 90 Sr/km^2



1958-69

Quarterly deposition of Sr-90 by rain

mCi 90 Sr/km^2

	Kent	U.K.		Kent	U.K.		Kent	U.K.		Kent	U.K.
1958	?	1.0	1961	0.0	0.3	1964	0.8	2.8	1967	0.1	0.4
	?	2.0		0.0	0.5		2.1	6.8		0.1	0.4
	?	1.1		0.1	0.4		0.5	3.4		0.0	0.2
	?	1.3		0.3	1.0		0.4	1.9		0.0	0.1
1959	0.3	2.4	1962	0.3	2.3	1965	0.3	1.5	1968	0.0	0.2
	0.7	3.6		0.5	3.0		0.4	2.1		0.0	0.3
	0.2	1.2		0.6	3.6		0.3	1.7		0.0	0.4
	0.1	0.5		0.4	1.8		0.2	0.7		0.1	0.1
1960	0.1	0.5	1963	0.6	3.5	1966	0.2	0.8	1969	0.1	0.1
	0.2	0.7		1.6	6.5		0.2	1.0		0.1	0.2
	0.1	0.6		1.2	5.9		0.2	0.6			0.3
	0.1	0.3		0.7	3.1		0.1	0.3			0.1

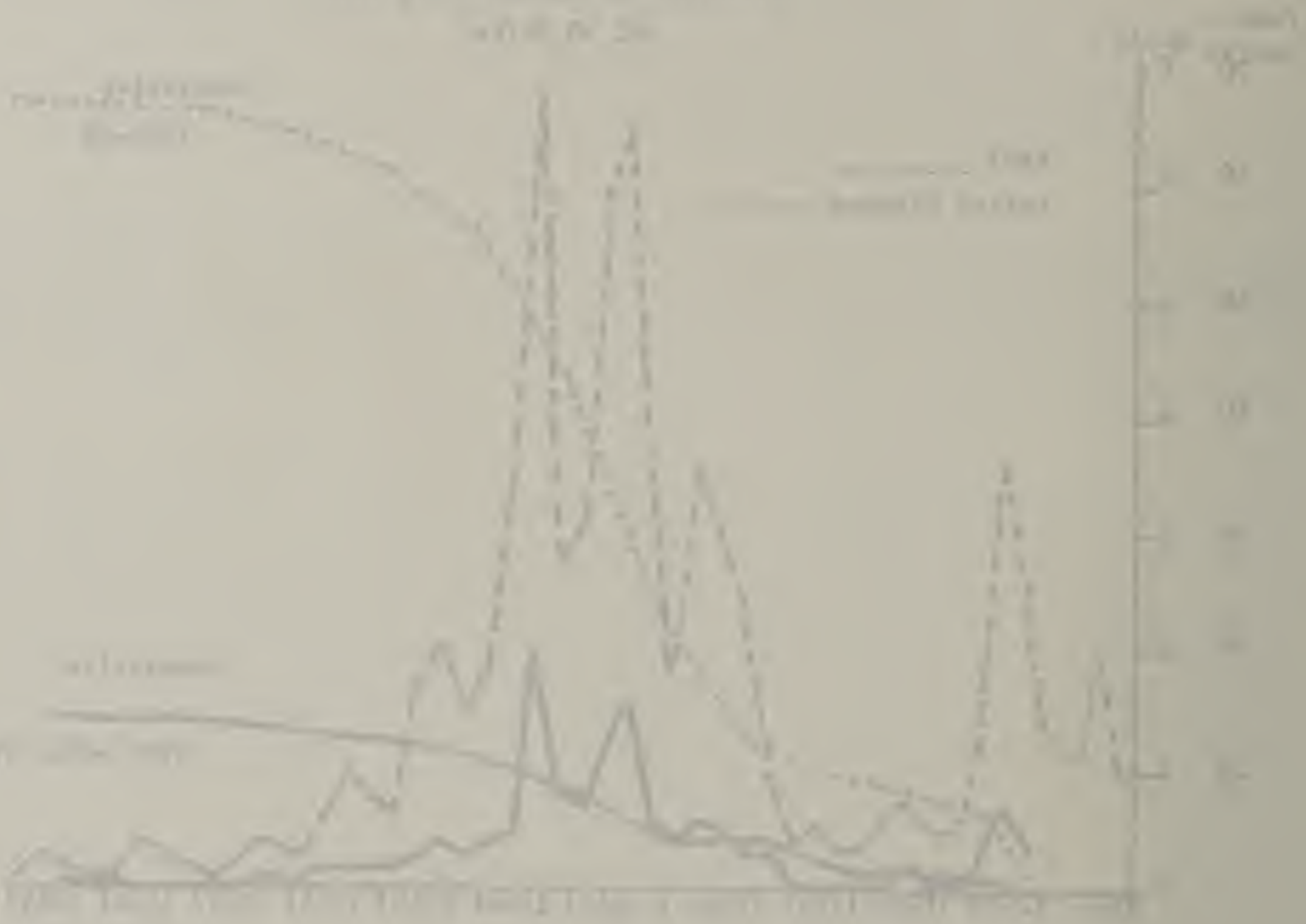
1959-69

Cumulative deposit of Sr-90 by rain

1959	1.3	7.7.	1962	4.0	22.7	1965	13.1	62.6	1968	14.1	67.4
1960	1.8	9.8	1963	8.1	41.7	1966	13.8	65.3	1969	14.3*	68.1
1961	2.2.	12.0	1964	11.9	56.6	1967	14.0	66.4			

* to June only

Not corrected for radioactive decay

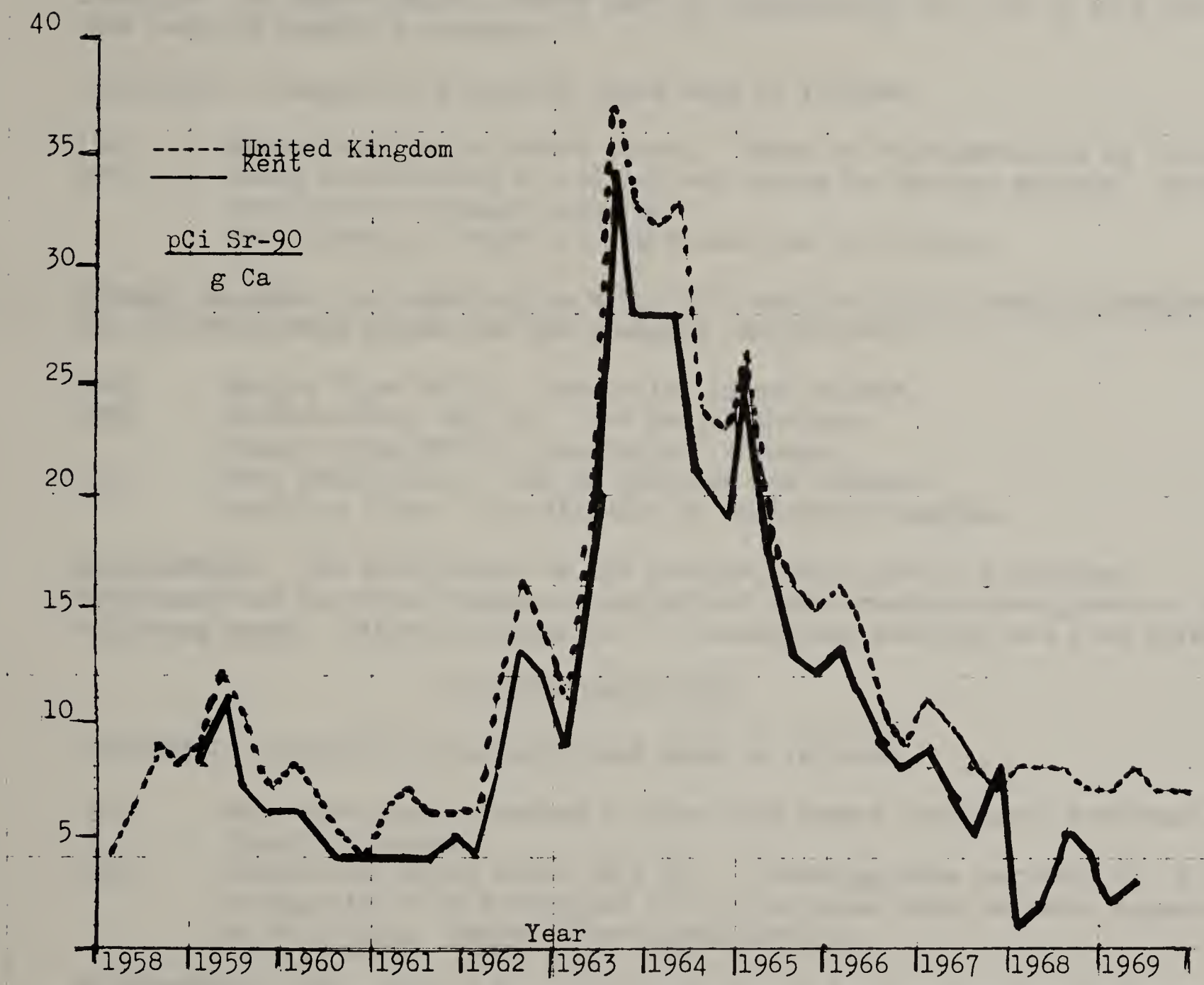


TABLEXLVI

RADIOACTIVITY

MILK

Ratio of Strontium 90 to Calcium



	Milk Strontium Units					Sr-90 pCi ^{90}Sr/g Ca				
	Kent	U.K.		Kent	U.K.		Kent	U.K.		Kent	U.K.
1958	?	4	1961	4	6	1964	28	32	1967	9	11
	?	6		4	7		28	33		7	10
	?	9		4	6		21	24		5	8
	?	8		5	6		19	23		8	7
1959	8	9	1962	4	6	1965	26	26	1968	1	8
	11	12		8	11		17	19		2	8
	7	10		13	16		13	16		5	8
	6	7		12	14		12	15		4	7
1960	6	8	1963	9	11	1966	13	16	1969	2	7
	5	7		20	21		11	14		3	8
	4	5		34	37		9	10		?	7
	4	4		28	33		8	9		?	7
					Annual means						
1958	?	7	1961	4	6	1964	24	28	1967	7	9
1959	8	10	1962	9	12	1965	17	19	1968	3	8
1960	5	6	1963	23	26	1966	10	12	1969	?	7

Kent measurements from reports of the County Analyst
United Kingdom measurements from reports of the Agricultural Research Council

TABLE XLVII AIR HYGIENE

POLLUTION WITH PRODUCTS OF COMBUSTION

DOMESTIC: No Smoke Control Orders were in operation at the end of 1972 and none were in immediate prospect.

INDUSTRIAL: Complaints regarding smoke were as follows:

1967	Smoke from burning waste paper. Ceased on representation to factory.
1971	Smoke from burning of old railway trucks in factory grounds. Stopped when factory manager informed.
	Soot blowing. Ceased on representation to factory.

Chimney heights: In consultation with the Council's Public Health Inspectors the following were agreed and new chimneys constructed:

1967	Empire Paper Mills. New boiler house chimney.
1969	Merchant Navy College. New boiler chimney.
	Empire Paper Mills. New factory chimney.
1971	Kent Kraft Mills. New boilerhouse and chimney.
	Robinson Sacks. Installation of incinerator agreed.

MEASUREMENTS: The environment of the Swanley, Horns Cross, Northfleet , Swanscombe and Dartford volumetric gauges and their readings are given on the following pages. Winter readings of all Thames-side readings are also given.

POLLUTION WITH DUST

INDUSTRIAL: Complaints regarding dust were as follows:

1970	Excessive dust, presumed to come from cement industry. Referred to Alkali Inspector.
1972	Orange and yellow blobs fall out. Investigations carried out in conjunction with Northfleet U.D., from whose area nuisance appeared to be coming. Ceased after investigation.

MEASUREMENTS: There are 25 gauges measuring dust for the local authorities of the Thames-side areas. Only 7 of these gauges are in the area covered by Dartford M.B., Dartford R.D., Northfleet U.D., and Swanscombe U.D. An extract of a separate summary of the Thames-side readings 1954 to 1969 is given in the pages that follow.

The proportional changes of the gauges in the area are illustrated by graphs on logarithmic scale. If all the gauges change in the same proportion over a long enough period to make it likely that weather is an insignificant influence then a change of amount of emission of dust is the factor likely to be most influential in causing that change.

Another means of compensating for the influence of weather on the deposits of dust from cement works is to assume that dust from other sources is emitted in constant amounts, the percentage of dust from cement works in total dust collected by the gauges can then be regarded as an index of amount emitted.

NOISE: Complaints received by the Council's Public Health Inspectors:

	1967	1968	1969	1970	1971	1972
Starting of lorries early morning	-	2	1	-	-	-

TABLE XLVIII

AIR POLLUTION WITH PRODUCTS OF COMBUSTION

The Volumetric Gauges

The management of the local authority gauges is provided by the Councils Public Health Inspectors. The nature of the sites of the gauges needs consideration if one is to study the records of the whole area.

Swanley I Code B3 is in the public health office which is one of numerous separate well-spaced buildings in their own grounds on central heating by oil or electricity. Medium density housing lies to the North-East round to the South-West. Elsewhere there is open space.

Stone (Horns Cross) Code X is in the A.P.C.M. research laboratory which again is in park land beyond which is medium density housing in the West and North-West $\frac{2}{3}$ mile to the North are two cement works.

Swanscombe 2 Code B2 is in the precincts of the Swanscombe Council Offices in a small park amongst medium density housing with open space within $\frac{1}{4}$ mile to the South and to the North. Cement works lie $\frac{2}{3}$ mile to the North and a mile beyond is the River Thames and its open space.

Northfleet 5 Code X is on the 2nd floor of Northfleet Council Offices. In the immediate vicinity is residential housing of medium density. Open country begins within $\frac{1}{4}$ mile to the South. Within $\frac{1}{2}$ mile to the North and N.E. is an industrial area with a cement works, paper factory and electricity generating station dominating the environment. To the North beyond is the open space of the River Thames.

Dartford 6 Code D2 is in the health office in the commercial centre of the town set back 10 yards from a traffic laden street and with a park in the vicinity to the South and industry to the North.

Three gauges - Stone (Horns Cross), Swanscombe and Northfleet have cement works in the vicinity. These might be kept in mind as the dust from these works will modify the darkness of the smoke stain and it is possible that it might diminish the acidity from which the SO_2 readings are assessed.

Class Code (National Survey Site Classification)

In the national survey of which these readings form part each gauge site is given a code number as a concise way of classifying the surroundings of each site. The meanings of the codes are as follows:

- B2 Residential area with medium density housing, typically in an inner suburb or housing estate, surrounded by other built-up areas but interspersed with some industrial undertakings
- B1 Residential area with medium-density housing typically an inner suburb or housing estate, surrounded by other built-up areas.
- B3 Residential area with medium-density housing surrounded by or interspersed with areas with low potential A.P. output (park, fields, coast) or any residential area with low-density housing.
- C1 Industrial area without domestic premises
- C2 Industrial area interspersed with domestic premises of high density or in multiple occupation
- D1 Commercial area or one with predominantly central heating
- D2 Small town centre, limited commercial area mixed with old residential housing and possibly minor industry.
- E Smoke control area or smokeless zone (the letter to be added to the primary classification).
- O1 Open country but not entirely without source(s) of pollution, e.g. airfields.
- R Rural community
- X Unclassified site or mixed area
- A2 Residential area with high and medium density housing surrounded by built-up areas interspersed with industrial undertakings.

Smoke calculations. These are by use of the British Standard Smoke Calibration Curve.

TABLE XLIX

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
INTERPRETATION OF SMOKE/SO_2 RATIOS

In 1965 in England and Wales 0.90 million tons of smoke with 0.70 million tons of SO_2 were emitted from domestic coal-fired chimneys. From the chimneys of efficient fuel combustion i.e. industry and power stations 0.25 million tons of smoke were emitted with 5.62 million tons of SO_2 (investigation Atmos.Pull.1956-66 tables 1 and 2). Thus, the smoke/SO_2 ratios of these emissions were 90/70 = 1.29 and 0.25/5.62 = 0.05 and for the whole country was 0.90 + 0.25/0.70 + 5.62 = 1.15/6.32 = 0.18. An over simplification of the ratios resulting from different proportions of the two sources was:

Domestic Coal burning	Efficient combustion (industry)	Smoke/SO_2 ratio of mixture
100%	0%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 100 + 0.05 \times 0}{1 \times 100 + 1 \times 0} = 1.29$
90%	10%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 90 + 0.05 \times 10}{1 \times 90 + 1 \times 10} = 1.16$
80%	20%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 80 + 0.05 \times 20}{1 \times 80 + 1 \times 20} = 1.04$
70%	30%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 70 + 0.05 \times 30}{1 \times 70 + 1 \times 30} = 0.92$
60%	40%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 60 + 0.05 \times 40}{1 \times 60 + 1 \times 40} = 0.79$
50%	50%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 50 + 0.05 \times 50}{1 \times 50 + 1 \times 50} = 0.67$
40%	60%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 40 + 0.05 \times 60}{1 \times 40 + 1 \times 60} = 0.55$
30%	70%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 30 + 0.05 \times 70}{1 \times 30 + 1 \times 70} = 0.42$
20%	80%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 20 + 0.05 \times 80}{1 \times 20 + 1 \times 80} = 0.30$
10%	90%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 10 + 0.05 \times 90}{1 \times 10 + 1 \times 90} = 0.17$
0%	100%	$\frac{\text{Smoke}}{SO_2} = \frac{1.29 \times 0 + 0.05 \times 100}{1 \times 0 + 1 \times 100} = 0.05$

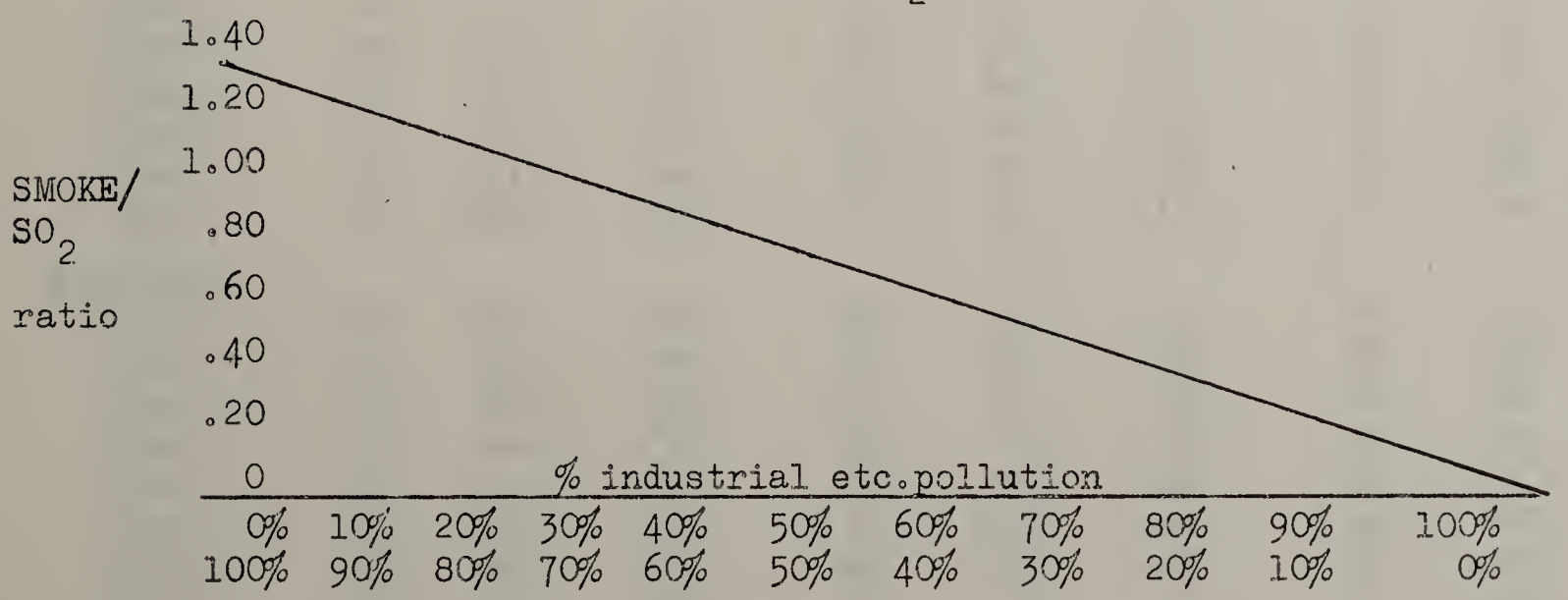


TABLE L

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
MONTHS OF MINIMUM POLLUTION

microgrammes per cubic metre

Gauge and year	June Smoke	June SO_2	June Ratio	July Smoke	July SO_2	July Ratio	August Smoke	August SO_2	August Ratio
SWANLEY									
1963	19	68	.28	20	54	.37	20	39	.51
1964	19	65	.29	21	75	.28	25	75	.33
1965	21	95	.22	15	68	.22	20	88	.23
1966	22	65	.34	19	70	.27	14	68	.21
1967	12	68	.18		N			N	
1968	13	66	.20	15	61	.25	13	61	.21
1969	16	72	.22	27	90	.30	12	63	.19
1970	14	84	.17	12	50	.24	15	60	.25
HORNS CROSS									
1963	15	71	.21	10	61	.16	12	48	.25
1964	16	51	.31	21	70	.30	21	67	.31
1965	15	66	.23	8	45	.18	18	53	.34
1966	19	44	.43	20	30	.67	21	28	.75
1967	15	47	.32	13	53	.25	N	N	N
1968	13	63	.21	13	40	.33	13	31	.42
1969	11	87	.13	20	76	.26	7	68	.10
1970	10	99	.10	10	44	.23	12	71	.17
NORTHFLEET									
1963	17	90	.19	11	58	.19	12	54	.22
1964	17	58	.29	17	17	.15	21	75	.28
1965	16	101	.16	13	61	.21	20	83	.24
1966	20	88	.23	22	74	.30	21	72	.29
1967	16	93	.17	17	75	.23	19	58	.33
1968	18	84	.21	16	68	.24	18	47	.38
1969	23	90	.26	18	64	.28	7	71	.10
1970	16	96	.17	11	45	.24	17	43	.40
SWANSCOMBE									
1963	-	-	-	-	-	-	-	-	-
1964	-	-	-	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-
1966	18	92	.20	19	55	.35	18	77	.23
1967	15	72	.21	13	62	.21	13	42	.31
1968	15	83	.18	15	66	.23	15	57	.26
1969	15	111	.14	28	97	.29	9	98	.09
1970	15	125	.12	11	62	.18	11	66	.17
DARTFORD									
1963	30	108	.28	26	76	.34	29	81	.36
1964	31	88	.35	29	91	.32	36	89	.40
1965	30	104	.29	23	74	.31	40	94	.43
1966	34	94	.36	41	81	.51	36	98	.37
1967	34	111	.31	28	97	.29	34	77	.44
1968	35	109	.32	41	102	.40	44	98	.45
1969	36	95	.38	48	111	.43	22	104	.21
1970	47	122	.39	41	55	.75	47	84	.56

TABLE LI

AIR POLLUTION WITH PRODUCTS OF COMBUSTION
MONTHS OF MAXIMUM POLLUTION

microgrammes per cubic metre

Gauge and year	December			January			February		
	Smoke	SO_2	Ratio	Smoke	SO_2	Ratio	Smoke	SO_2	Ratio
SWANLEY									
1963/64		N			N			N	
1964/65	102	208	.49	62	146	.42	65	213	.31
1965/66	51	102	.50	53	150	.35	47	83	.57
1966/67	67	120	.56	82	173	.47	57	123	.46
1967/68	90*	173	.52	66	178	.37	63	132	.48
1968/69	56	135	.41	50*	106	.47	61	181	.34
1969/70	52*	206	.25	31	120	.26	33	142	.23
1970/71	47	129	.36	43*	108	.40	48	137	.35
HORNS CROSS									
1963/64	139	149	.93	133	153	.87	171	165	1.04
1964/65	91	137	.66	54	101	.53	82	151	.54
1965/66	81	78	1.04	83	89	.93	44	54	.81
1966/67	59	73	.94	72	97	.74	47	61	.77
1967/68	66	93	.71	55	125	.44	50	78	.64
1968/69	47	95	.49	40	67	.60	60	161	.37
1969/70	46	106	.43	31	63	.49	28	109	.26
1970/71	39	57	.68	42	85	.49	50	115	.43
NORTHFLEET									
1963/64	167	157	1.06	159	175	.91	194	178	1.09
1964/65	101	198	.51	68	138	.49	87	185	.47
1965/66	93	165	.56	114	165	.69	53	101	.52
1966/67	67	142	.47	89	168	.53	58	110	.53
1967/68	87	171	.51	74	191	.39	59	105	.56
1968/69	72	113	.64	59	130	.45	83	205	.40
1969/70	62	73	.85	N	N	N	34	57	.60
1970/71	60	96	.63	48	77	.62	47	86	.55
SWANSCOMBE									
1963/64	-	-	-	-	-	-	-	-	-
1964/65	-	-	-	-	-	-	-	-	-
1965/66	94	96	.98	104	115	.90	49	63	.78
1966/67		N		85	146	.58	-	-	-
1967/68	89*	136	.65	75	159	.47	74	98	.76
1968/69	N	N	N	65	85	.76	72	190	.38
1969/70	66*	160	.41	53	95	.56	46	130	.35
1970/71	55	84	.65	47	94	.50	42	129	.33
DARTFORD									
1963/64	214	268	.80	197	282	.70	199	262	.76
1964/65	130	259	.50	91	203	.45	103	293	.33
1965/66	117	186	.63	132	226	.58	69	121	.57
1966/67	94	183	.51	116	238	.49	74	152	.49
1967/68	106	265	.40	91	304	.30	111	204	.54
1968/69	106	184	.58	81	166	.49	103	264	.39
1969/70	99	214	.46	77	139	.55	61	175	.35
1970/71	97	177	.55	75	161	.47	75	176	.43

* estimated from reflectometer of less than 40

TABLE LII

AIR POLLUTION WITH PRODUCTS OF COMBUSTION

NUMBER OF DAYS WHEN READINGS EXCEEDED 500 MICROGRAMMES PER CUBIC METRE

Highest daily readings given with month

Code	Gauge site	Winter	Smoke	Sulphur-dioxide
B3	SWANLEY 1	1963/4	3 619 (Dec)	4 786 (Jan)
		1964/5	0 0	3 730 (Dec)
		1965/7	0	0
		1967/8	0	1 603 (Dec)
		1968/9	0	2 604 (Feb)
		1969/70	0	2 773 (Dec)
X	HORNS CROSS (STONE)1	1963/4	2 873 (Nov)	0
		1964/70	0	0
B2	SWANSCOMBE 2	1966/67	0	0
		1967/8	0	1 554 (Jan)
		1968/70	0	0
X	NORTHFLEET 5	1963/4	3 534 (Feb)	4 542 (Feb)
		1964/5	0	0
		1965/6	0	1 562 (Dec)
		1966/7	0	1 556 (Jan)
		1967/8	0	0
		1968/9	0	1 549 (Feb)
		1969/70	0	0
D2	DARTFORD 6	1963/4	5 837 (Feb)	11 785 (Jan)
		1964/5	0	8 1106 (Nov)
		1965/6	0	1 533 (Nov)
		1966/7	0	4 542 (Jan)
		1967/8	0	4 1069 (Jan)
		1968/9	0	2 575 (Jan)
				2 632 (Feb)
		1969/70	0	1 644 (Dec)

DEGREE DAYS

	Av.1950-70	1962-3	1963-4	1964-5	1965-6	1966-7	1967-8	1968-9	1969-70
Sept	140	202	169	143	186	129	124	101	104
Oct	291	312	308	393	272	243	224	169	207
Nov	501	560	423	425	565	515	535	474	508
Dec	647	793	796	652	590	560	633	724	687
Jan	701	1031	765	653	740	619	646	541	639
Feb	631	859	625	623	447	507	675	705	601
Mar	558	556	657	550	497	436	488	624	655
Oct-Mar	3329	4111	3574	3296	3111	2880	3201	3237	3297
April	413	410	411	383	398	434	408	418	478
May	253	310	172	233	260	261	310	245	187
Sept-May	4135	5033	4326	4055	3955	3704	4043	4001	4066
June	125	124	142	130	75	125	108	142	80
July	75	104	55	96	87	55	82	57	74
August	83	118	81	90	113	79	54	62	70
June-Aug	283	346	278	316	275	259	244	261	224

Degree day: each 1°F below 60°F maintained for 24 hours. Source Gas Council

TABLE LIII

SMOKE THAMES-SIDE WINTER

Code	Site	1962-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70
		microgrammes per cubic metre							
B1	Bexleyheath 1	N	156	115	83	75	66	66	52
C2	Erith 1	92	76	N	-	-	-	-	-
A2	Erith 3	184	168	N	N	84	75	68	55
C1	Erith 4	-	-	N	56	46	N	39	51
D2	Crayford 2	101	141	65	83	77	73	76	52
B3	Sidcup 3	123	120	89	71	59	50	48	33
B3	Swanley 1	116	114	74	53	60	N	50	33
D2	Dartford 6	146	144	103	94	89	87	89	62
X	Stone I Horns Cross	102	102	N	63	52	46	43	31
B2	Swanscombe 2	-	-	-	N	N	63	61	47
X	Northfleet 5	119	118	82	76	63	58	64	N
B3/E	Thurrock 6	105	86	80	67	64	58	52	39
B1	Thurrock 7	141	139	131	113	92	94	89	87
D2	Thurrock 9	-	-	119	99	87	79	N	47
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	62	57
B3	Tilbury/Thurrock 29	-	-	-	-	N	36	31	29
O1	Tilbury/Thurrock 30	-	-	-	-	N	N	34	32
O1	Tilbury/Thurrock 31	-	-	-	-	N	N	35	33
B3	Tilbury/Thurrock 32	-	-	-	-	N	54	44	N
R	Tilbury/Thurrock 33	-	-	-	-	N	32	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	26	N	N
D1	Gravesend 22	177	179	121	N	N	-	-	-
D1	Gravesend 23	-	-	-	-	-	-	45	N
B3	Strood 2	123	119	99	77	73	64	65	52
R	Kingsnorth 1	-	-	-	-	-	-	N	21
X	Kingsnorth 3	-	-	-	-	N	34	N	38
O1	Kingsnorth 4	-	-	-	-	N	N	N	30
O1	Kingsnorth 5	-	-	-	-	N	29	N	27
B3	Kingsnorth 7	-	-	-	-	N	31	N	N
X	Kingsnorth 8	-	-	-	-	N	42	N	36
B3	Kingsnorth 9	-	-	-	-	N	33	N	28
O1	Kingsnorth 10	-	-	-	-	N	34	N	31
B3	Kingsnorth 11	-	-	-	-	N	38	N	34
R	Kingsnorth 12	-	-	-	-	N	44	N	N
A1	Rochester 4	133	N	99	90	65	64	67	44
X	Chatham 3	N	134	88	84	64	57	53	51

Source National Survey

TABLE LIV

SULPHUR DIOXIDE THAMES-SIDE WINTER

Code	Site	1962-3	63-64	64-65	65-66	66-67	67-68	68-69	69-70
		microgrammes per cubic metre							
B1	Bexleyheath 1	N	198	212	177	94	179	155	139
C2	Erith 1	185	60	N	-	-	-	-	-
A2	Erith 3	280	217	N	N	202	214	157	157
C1	Erith 4	-	-	N	114	137	N	160	184
D2	Crayford 2	293	209	177	166	141	177	184	132
B3	Sidcup 3	216	185	195	163	123	133	133	110
B3	Swanley 1	182	141	169	124	120	N	123	135
D2	Dartford 6	256	N	225	181	173	202	173	150
X	Stone I Horns Cross	143	110	N	84	67	75	96	83
B2	Swanscombe 2	-	-	-	N	N	108	108	111
X	Northfleet 5	190	125	164	152	127	126	130	N
B3/E	Thurrock 6	198	159	169	129	138	124	101	134
B1	Thurrock 7	192	150	168	141	167	138	119	140
D2	Thurrock 9	-	-	169	118	141	135	N	129
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	131	128
B3	Tilbury/Thurrock 29	-	-	-	-	N	116	76	81
01	Tilbury/Thurrock 30	-	-	-	-	N	N	93	100
01	Tilbury/Thurrock 31	-	-	-	-	N	N	82	89
B3	Tilbury/Thurrock 32	-	-	-	-	N	195	124	N
R	Tilbury/Thurrock 33	-	-	-	-	N	134	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	96	N	N
D1	Gravesend 22	190	163	154	121	N	-	-	-
D_1	Gravesend 23	-	-	-	-	-	-	112	100
B3	Strood 2	155	131	143	111	107	134	116	126
R	Kingsnorth 1	-	-	-	-	-	-	N	88
X	Kingsnorth 3	-	-	-	-	N	98	N	97
01	Kingsnorth 4	-	-	-	-	N	N	N	80
01	Kingsnorth 5	-	-	-	-	N	76	N	69
B3	Kingsnorth 7	-	-	-	-	N	104	N	N
X	Kingsnorth 8	-	-	-	-	N	118	N	97
B3	Kingsnorth 9	-	-	-	-	N	118	N	117
01	Kingsnorth 10	-	-	-	-	N	86	N	81
B3	Kingsnorth 11	-	-	-	-	N	98	N	84
R	Kingsnorth 12	-	-	-	-	N	103	N	N
A1	Rochester 4	158	N	121	109	107	99	90	82
X	Chatham 3	N	130	144	134	109	112	155	97

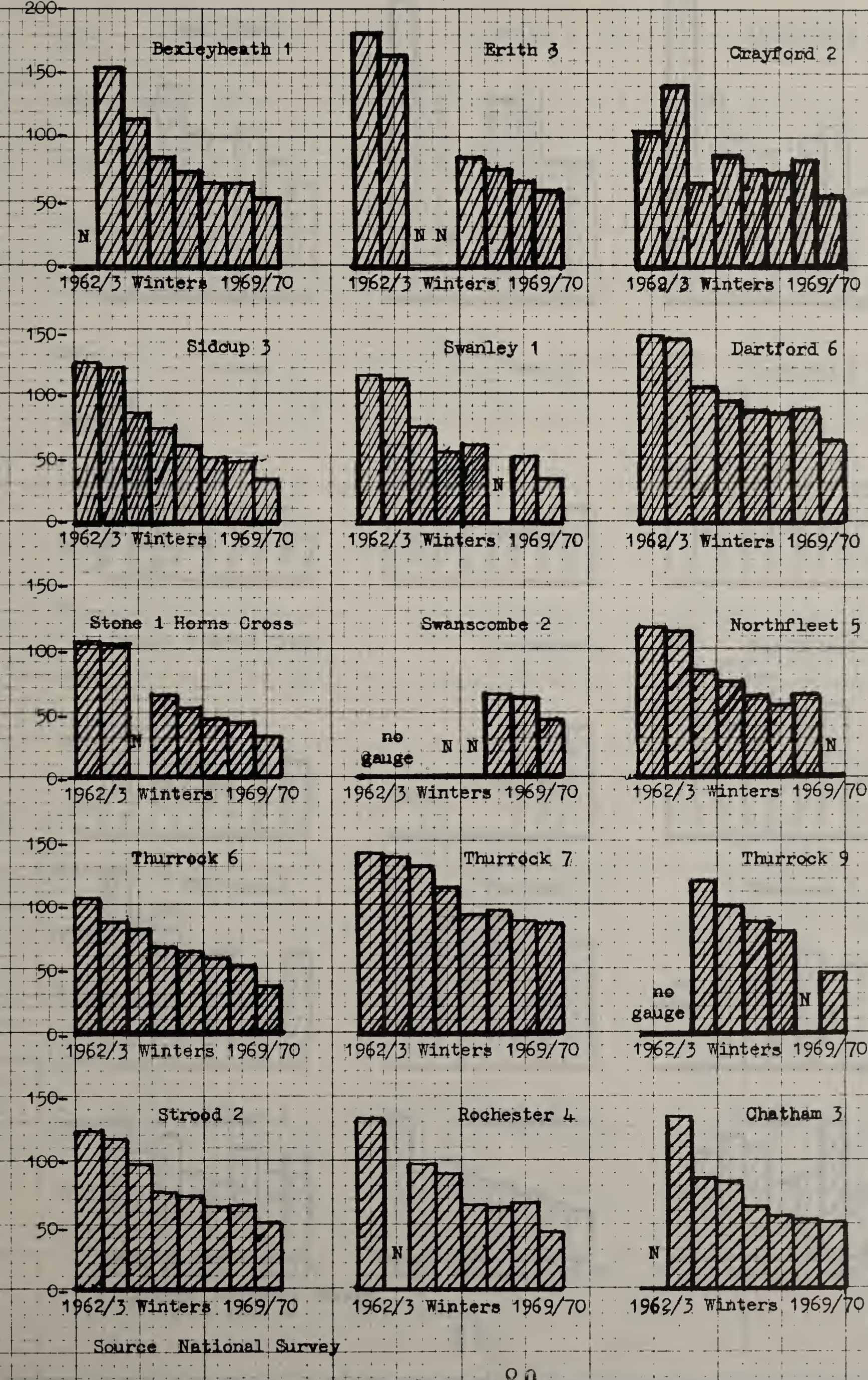
TABLE LV

SMOKE/SO_2 RATIO THAMES-SIDE WINTER

Code	Site	1962-3	63-64	64-65	65-66	66-67	67-68	68-69	69-70
		microgrammes per cubic metre							
B1	Bexleyheath 1	N	.79	.54	.47	.80	.37	.43	.37
C2	Erith 1	.50	1.27	N	-	-	-	-	-
A2	Erith 3	.66	.77	N	N	.42	.35	.43	.35
C1	Erith 4	-	-	N	.49	.34	N	.24	.28
D2	Crayford 2	.34	.67	.37	.50	.55	.41	.41	.39
B3	Sidcup 3	.57	.65	.46	.44	.48	.38	.36	.30
B3	Swanley 1	.64	.81	.44	.43	.50	N	.41	.24
D2	Dartford 6	.57	N	.46	.52	.51	.43	.51	.41
X	Stone I Horns Cross	.71	.93	N	.75	.78	.61	.45	.37
B2	Swanscombe 2	-	-	-	N	N	.58	.56	.42
X	Northfleet 5	.63	.94	.50	.50	.50	.46	.49	N
B3/E	Thurrock 6	.53	.54	.47	.52	.46	.47	.51	.29
B1	Thurrock 7	.73	.93	.78	.80	.55	.68	.75	.62
D2	Thurrock 9	-	-	.70	.84	.62	.59	N	.36
B2	Tilbury/Thurrock 26	-	-	-	-	N	N	.47	.45
B3	Tilbury/Thurrock 29	-	-	-	-	N	.31	.41	.36
O1	Tilbury/Thurrock 30	-	-	-	-	N	N	.37	.32
O1	Tilbury/Thurrock 31	-	-	-	-	N	N	.43	.37
B3	Tilbury/Thurrock 32	-	-	-	-	N	.28	.35	N
R	Tilbury/Thurrock 33	-	-	-	-	N	.24	N	N
R	Tilbury/Thurrock 34	-	-	-	-	N	.27	N	N
D1	Gravesend 22	.93	1.10	.79	N	N	-	-	-
D1	Gravesend 23	-	-	-	-	-	-	.40	N
B3	Strood 2	.79	.91	.68	.69	.68	.48	.56	.41
R	Kingsnorth 1	-	-	-	-	-	-	N	.24
X	Kingsnorth 3	-	-	-	-	N	.35	N	.39
O1	Kingsnorth 4	-	-	-	-	N	N	N	.38
O1	Kingsnorth 5	-	-	-	-	N	.38	N	.39
B3	Kingsnorth 7	-	-	-	-	N	.30	N	N
X	Kingsnorth 8	-	-	-	-	N	.35	N	.37
B3	Kingsnorth 9	-	-	-	-	N	.28	N	.24
O1	Kingsnorth 10	-	-	-	-	N	.40	N	.38
B3	Kingsnorth 11	-	-	-	-	N	.39	N	.40
R	Kingsnorth 12	-	-	-	-	N	.43	N	N
A1	Rochester 4	.84	N	.82	.83	.61	.65	.74	.54
X	Chatham 3	N	1.03	.61	.62	.59	.51	.34	.53

SMOKE THAMES-SIDE WINTER

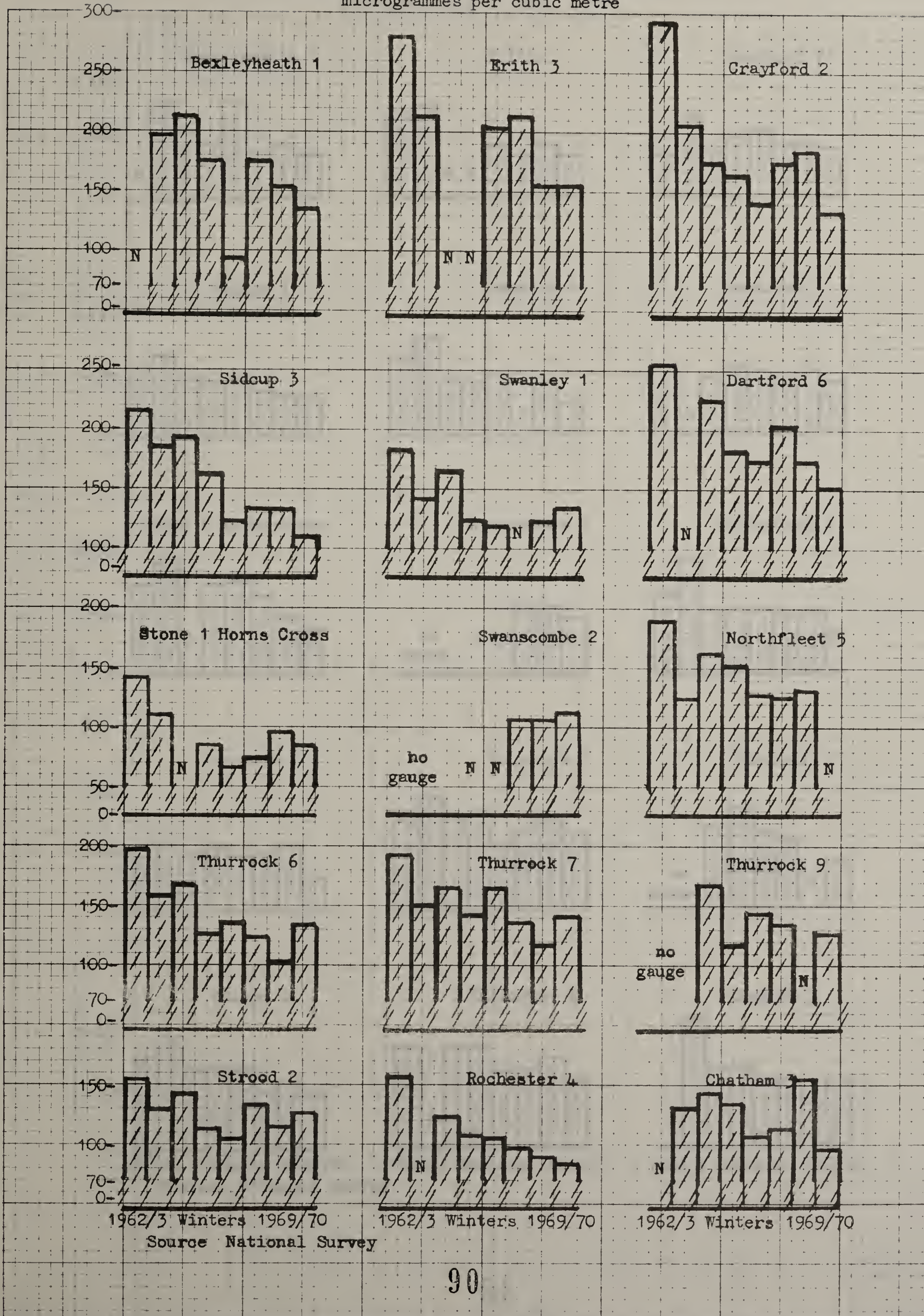
micrograms per cubic metre



Source National Survey

SULPHUR DIOXIDE THAMES-SIDE WINTER

microgrammes per cubic metre



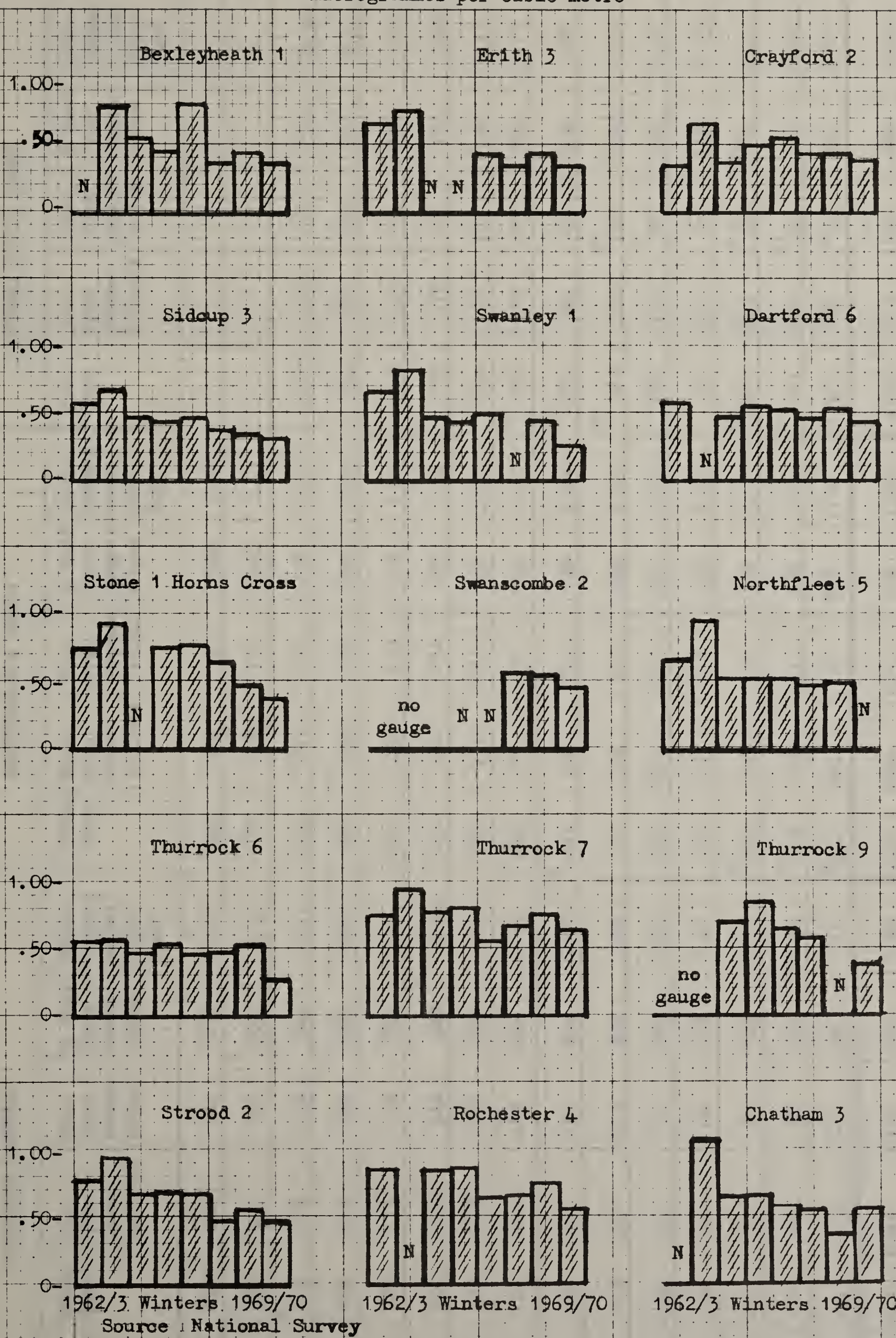
1962/3 Winters 1969/70

1962/3 Winters 1969/70

1962/3 Winters 1969/70

Source National Survey

SMOKE/SO_2 RATIO THAMES-SIDE WINTER
micrammes per cubic metre



Source : National Survey

TABLE LVI

DEPOSIT GAUGE READINGS

Year ending March	DARTFORD CENTRAL					DARTFORD BOW ARROW					DARTFORD JOYCE GREEN				
	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55	299	218	81	27%	0.37	283	196	87	31%	0.44					
1955-56	352	235	117	33%	0.50	400	209	191	48%	0.91					
1956-57	[e] 305	216	89	29%	0.41	294	172	122	42%	0.71	368	270	98	27%	0.36
1957-58	297	209	88	30%	0.42	374	209	165	44%	0.79	360	255	105	29%	0.41
1958-59	273	175	98	36%	0.56	353	174	179	51%	1.03	396	245	151	38%	0.62
1959-60	303	157	146	46%	0.82	451	180	271	60%	1.51	339	179	160	47%	0.89
1960-61	273	143	130	48%	0.91	385	132	253	66%	1.92	384	222	162	42%	0.73
1961-62	313	145	168	54%	1.16	[c] 406	109	297	73%	2.72	[a] 363	160	[a] 203	56%	1.27
1962-63	288	125	163	57%	1.30	[c] 411	106	305	74%	2.88	[h] 259	164	95	37%	0.58
1963-64	263	140	123	47%	0.88	375	166	209	56%	1.26	[a] 343	188	[a] 155	45%	0.82
1964-65	248	175	73	29%	0.42	345	220	125	36%	0.57	262	174	88	34%	0.51
1965-66	228	160	68	30%	0.43	337	220	117	35%	0.53	278	205	73	26%	0.36
1966-67	264	179	85	32%	0.47	[c] 421	286	135	32%	0.48	[d] 331	265	[d] 56	17%	0.21
1967-68	260	180	80	31%	0.44	[c] 333	202	131	39%	0.64	[a] 293	204	[a] 88	30%	0.44
1968-69	[b] 297	171	126	42%	0.74	[a] 411	201	210	51%	1.04	[b] 347	248	[b] 99	29%	0.50
Total	4263	2648	1635	38%	0.62	5579	2782	2797	50%	1.00	4313	2779	1534	36%	0.54
Yearly Mean	284	177	108			372	185	187			332	214	117		

TABLE LVII

DEPOSIT GAUGE READINGS

Year ending March	HORNS CROSS					SWANSCOMBE					NORTHFLEET				
	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55	620	204	416	67%	2.04	554	235	319	58%	1.36	448	190	258	58%	1.36
1955-56	685	251	434	63%	1.73	607	250	357	59%	1.43	545	220	325	60%	1.48
1956-57	578	172	406	70%	2.37	470	183	287	61%	1.57	428	161	267	63%	1.66
1957-58	643	223	420	65%	1.88	602	275	327	54%	1.19	517	236	281	54%	1.19
1958-59	573	184	389	68%	2.11	587	264	323	55%	1.22	597	325	272	46%	0.84
1959-60	678	186	492	73%	2.65	603	209	394	65%	1.83	658	224	434	66%	1.93
1960-61 [c]	576	129	447	77%	3.47	[a] 508	123	385	76%	3.13	448	116	332	74%	2.86
1961-62	720	116	604	84%	5.20	[c] 494	102	392	79%	3.84	450	107	343	76%	3.20
1962-63 [c]	729	145	584	80%	4.04	[c] 456	75	381	83%	5.08	433	72	361	84%	5.00
1963-64	562	103	459	82%	4.46	470	124	346	74%	2.79	432	132	300	69%	2.27
1964-65	588	130	458	78%	3.53	493	182	311	63%	1.71	407	169	238	58%	1.41
1965-66 [d]	610	264	346	57%	1.31	505	211	294	58%	1.39	418	196	222	53%	1.13
1966-67 [a]	618	259	359	58%	1.37	490	174	316	65%	1.83	[c] 445	221	224	50%	0.99
1967-68	590	210	380	65%	1.81	444	172	272	61%	1.59	N	N	N		
1968-69 [a]	735	274	461	63%	1.70	[a] 486	204	282	58%	1.38	N	N	N		
Total	9505	2850	6655	70%	2.34	7769	2783	4986	65%	1.78	6226	2369	3857	62%	1.63
Yearly Mean	634	190	444			517	186	333			479	183	298		

TABLE LVIII
DEPOSIT GAUGE READINGS

Year ending March	GRAVESEND DASHWOOD					GRAVESEND SWIMMING BATHS					GRAVESEND GAUGES COMBINED				
	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55															
1955-56															
1956-57	211	144	67	32%	0.47	202	138	64	32%	0.46	413	282	131	32%	0.47
1957-58	239	190	49	20%	0.26	239	183	56	23%	0.31	478	373	105	22%	0.28
1958-59	241	179	62	25%	0.35	233	169	64	27%	0.38	474	348	126	27%	0.36
1959-60	187	124	63	34%	0.51	219	151	68	31%	0.45	406	275	131	32%	0.48
1960-61	206	133	73	35%	0.55	227	157	70	31%	0.45	433	290	143	33%	0.49
1961-62	201	125	76	37%	0.61	214	145	69	32%	0.48	415	270	145	35%	0.54
1962-63	193	128	65	34%	0.51	[c] 195	135	60	30%	0.44	388	263	125	32%	0.48
1963-64	199	144	55	28%	0.38	221	162	59	27%	0.36	420	306	114	27%	0.37
1964-65	207	164	43	21%	0.26	214	165	49	23%	0.30	421	329	92	22%	0.28
1965-66	188	148	40	21%	0.27	210	166	44	21%	0.27	398	314	84	21%	0.27
1966-67	250	211	39	16%	0.19	226	196	30	13%	0.15	476	407	69	14%	0.17
1967-68	[b] 195	158	37	19%	0.23	208	181	27	13%	0.15	403	339	64	15%	0.18
1968-69	[a] 277	242	35	13%	0.15	[a] 204	169	35	17%	0.20	481	411	70	14%	0.15
Total	2794	2090	704	26%	0.35	2812	2117	695	25%	0.32	5606	4207	1399	25%	0.33
Yearly Mean	215	161	54			216	163	53			431	323	107		

TABLE LVIX

DEPOSIT GAUGE READINGS

	LONDON FRINGE GROUP excluding SWANLEY					DARTFORD GROUP excl. SOUTHERN HOSPITAL					HORNS CROSS		SWANSCOMBE		NORTHFLEET
Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio cement works/ other dust
1954-55											1622	629	993	61%	1.58
1955-56											1837	721	1116	61%	1.55
1956 57	912	740	172	19%	0.23	967	658	309	32%	0.47	1476	516	960	65%	1.86
1957-58	934	795	139	15%	0.18	1031	673	358	35%	0.53	1762	734	1028	58%	1.40
1958-59	920	716	204	22%	0.28	1022	594	428	42%	0.72	1757	773	984	56%	1.28
1959-60	1026	738	288	28%	0.39	1093	516	577	53%	1.13	1939	619	1320	68%	2.14
1960-61	929	695	234	25%	0.34	1042	497	545	52%	1.09	1532	368	1164	76%	3.18
1961-62	1019	726	293	29%	0.40	1082	414	668	62%	1.63	1664	325	1339	80%	4.12
1962-63	1033	722	311	30%	0.43	958	395	563	59%	1.43	1618	292	1326	82%	4.56
1963-64	888	673	215	24%	0.32	981	494	487	50%	0.99	1464	359	1105	75%	3.08
1964-65	856	747	109	13%	0.15	855	569	286	33%	0.50	1488	481	1007	67%	2.09
1965-66	917	784	133	15%	0.17	843	585	258	31%	0.44	1533	671	862	56%	1.28
1966-67	925	835	90	10%	0.11	1016	740	276	27%	0.37	1553	654	899	58%	1.37
1967-68	895	763	132	15%	0.17	886	586	300	34%	0.51		No gauge at Northfleet			
1968-69	1022	770	252	25%	0.33	1055	620	435	41%	0.70					
Total	12276	9704	2572	21%	0.27	12831	7361	5470	42%	0.72	21245	7142	14103	67%	1.98
Yearly Mean	944	746	198			987	566	421			1638	548	1085		

TABLE LX

DEPOSIT GAUGE READINGS

LONDON FRINGE GROUP excl. SWANLEY - DARTFORD GROUP excl.SOUTHERN HOSPITAL- HORNS CROSS, SWANSCOMBE,NORTHFLEET,GRAVESEND

13 GAUGES COMBINED

Year ending March	Total dust	Dust from other sources	Dust from cement works	% dust from cement works	Ratio: cement works/ other dust	Ratio: other dust/ dust from cement wks	% dust from other sources
1956-57	3768	2196	1572	42%	0.72	1.39	58%
1957-58	4205	2575	1630	39%	0.63	1.58	61%
1958-59	4173	2431	1742	42%	0.72	1.39	58%
1959-60	4464	2148	2316	52%	1.08	0.93	48%
1960-61	3936	1850	2086	53%	1.13	0.89	47%
1961-62	4180	1735	2445	59%	1.41	0.71	41%
1962-63	3997	1672	2325	58%	1.39	0.72	42%
1963-64	3753	1832	1921	51%	1.05	0.95	49%
1964-65	3620	2126	1494	41%	0.70	1.43	59%
1965-66	3691	2354	1337	36%	0.57	1.76	64%
1966-67	3970	2636	1334	34%	0.51	1.97	66%
1956-67	43757	23565	20202	46%	0.86	1.17	54%

In the foregoing tables:

The individual gauge readings for each year are given as tons per sq.mile.

To convert to milligrams per sq metre per day, multiply the amount of deposits by - $\frac{13}{12}$

Key to abbreviations in tables:

a Total of 6 winter months and a summer figure for 6 months estimated from 5

b Ditto " " 4

c Total of 6 summer months and a winter figure for 6 months estimated from 5

d Ditto " " 4

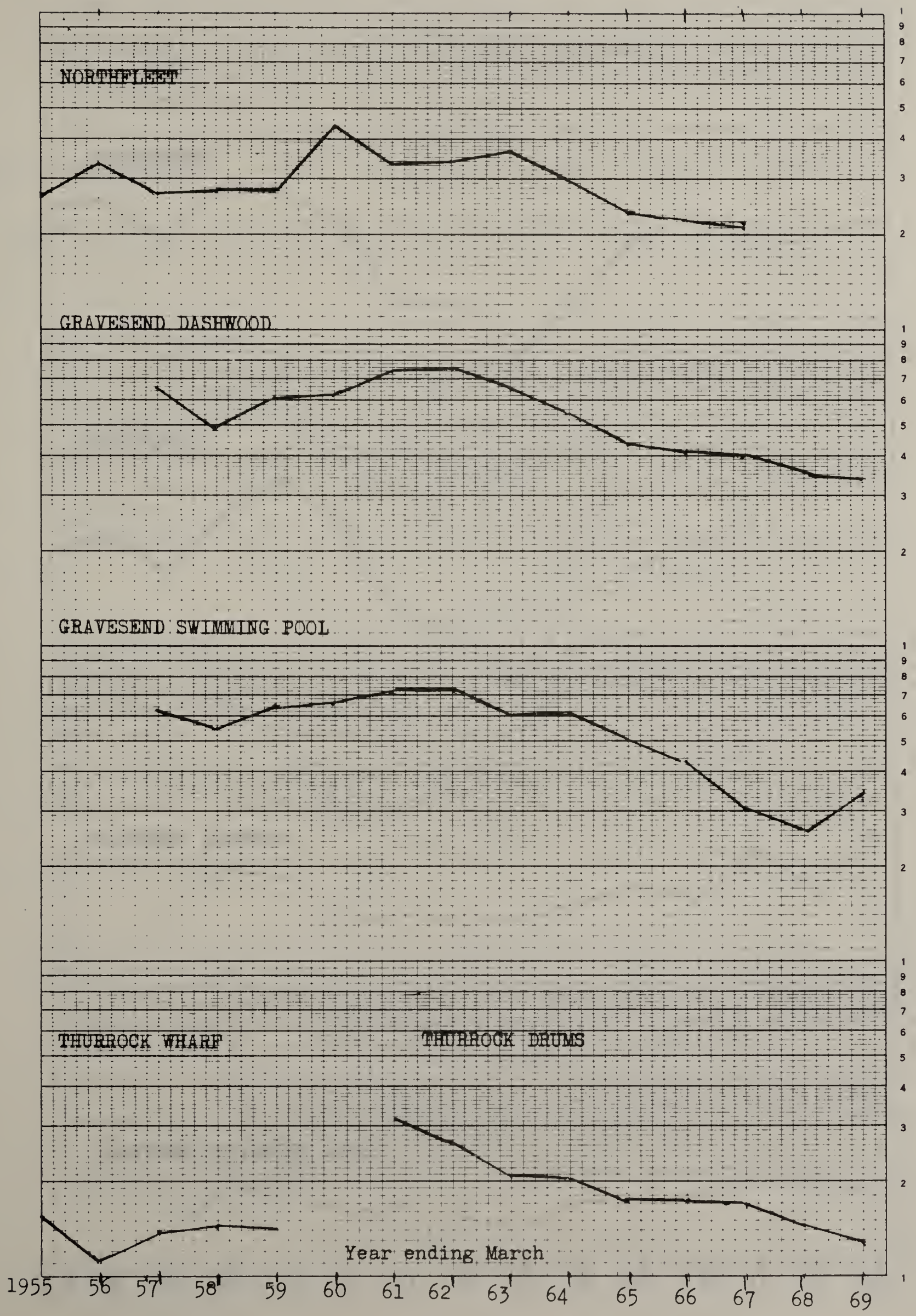
e A winter figure for 6 months estimated from 5 and a summer figure for 6 months estimated from 5

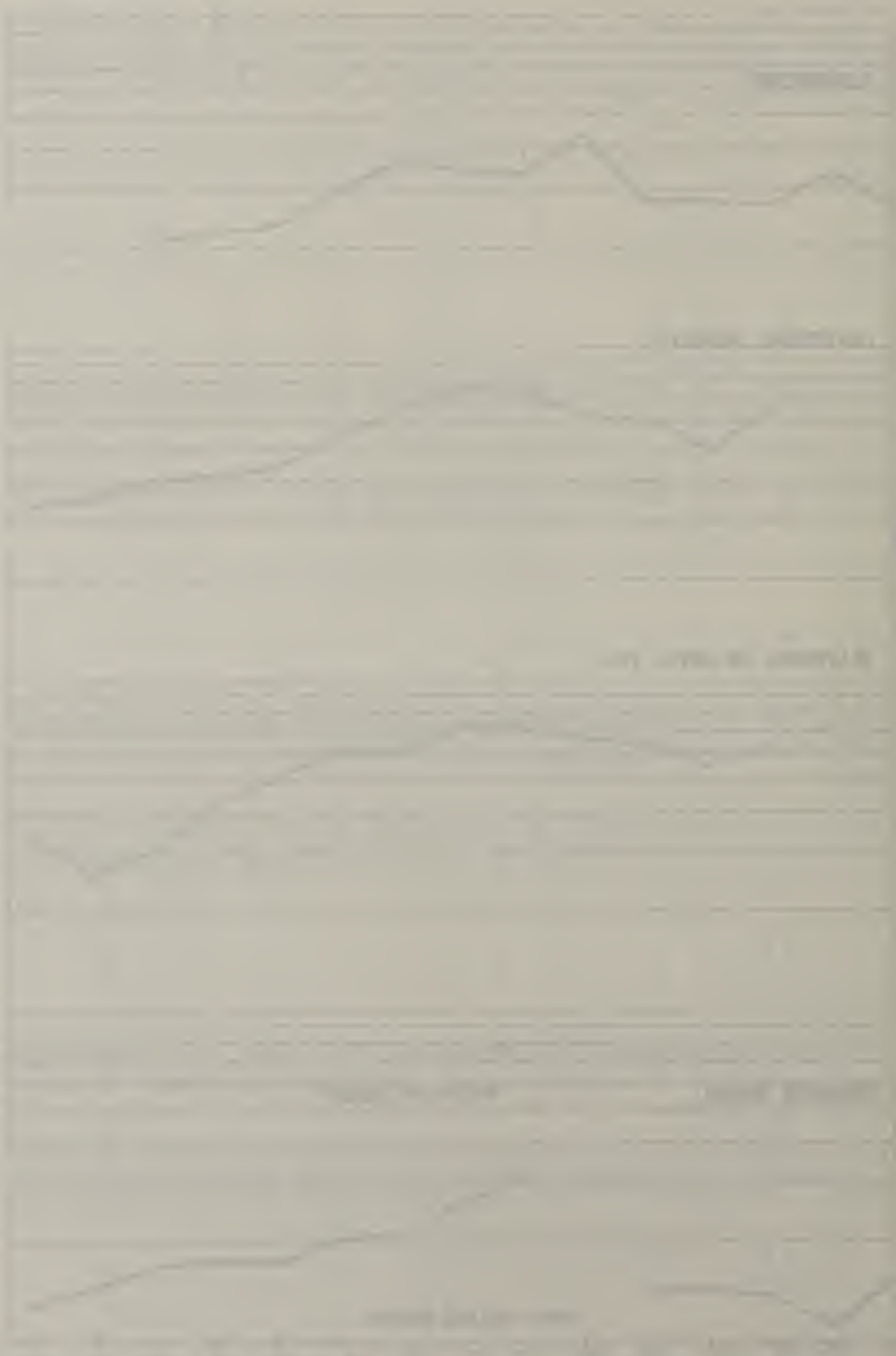
f A winter figure for 6 months estimated from 4 and a summer figure for 6 months estimated from 5

g A winter figure for 6 months estimated from 5 and a summer figure for 6 months estimated from 4

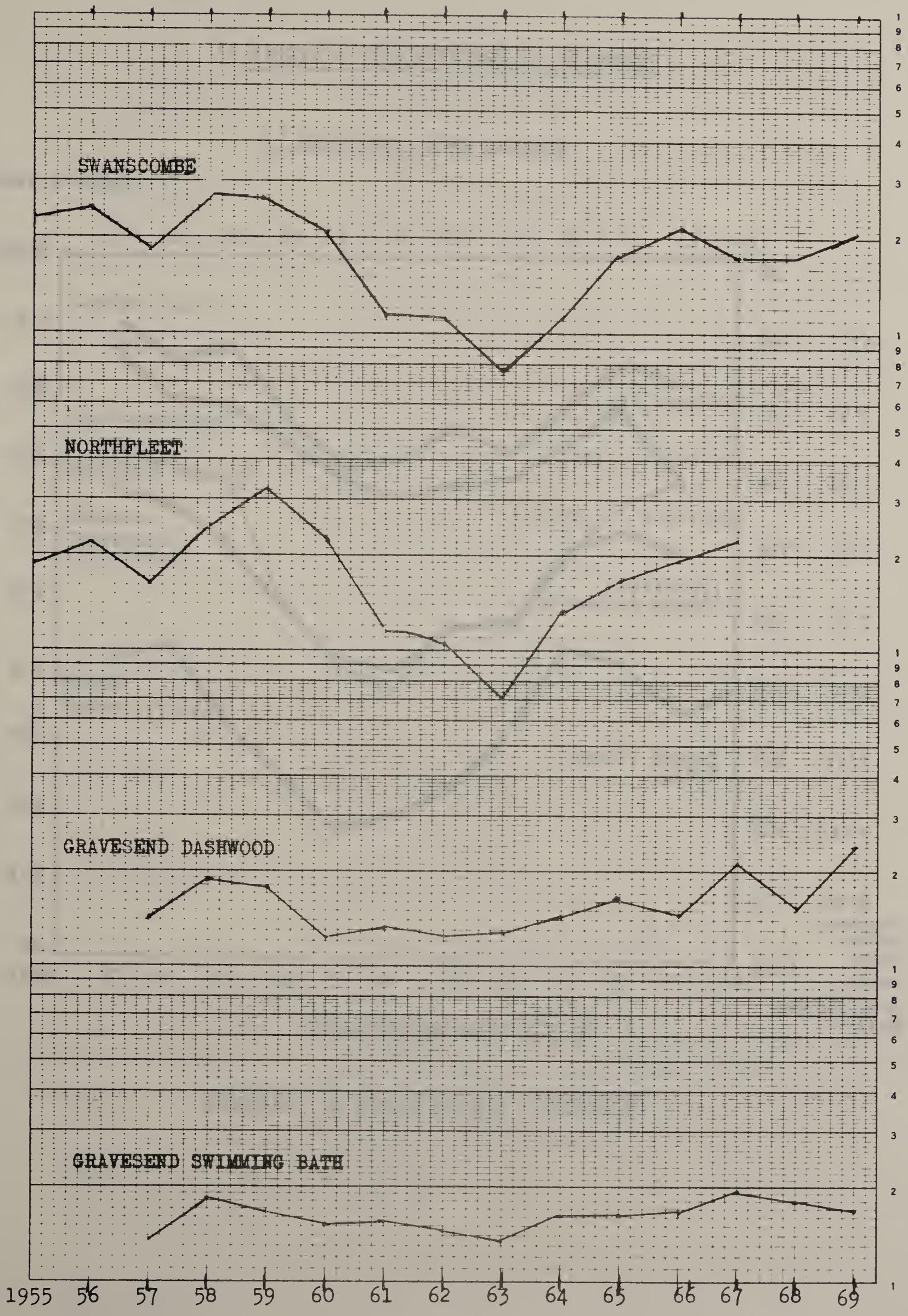
h Contains an estimate for a half year based on 3 monthly readings.

DUST FROM CEMENT WORKS

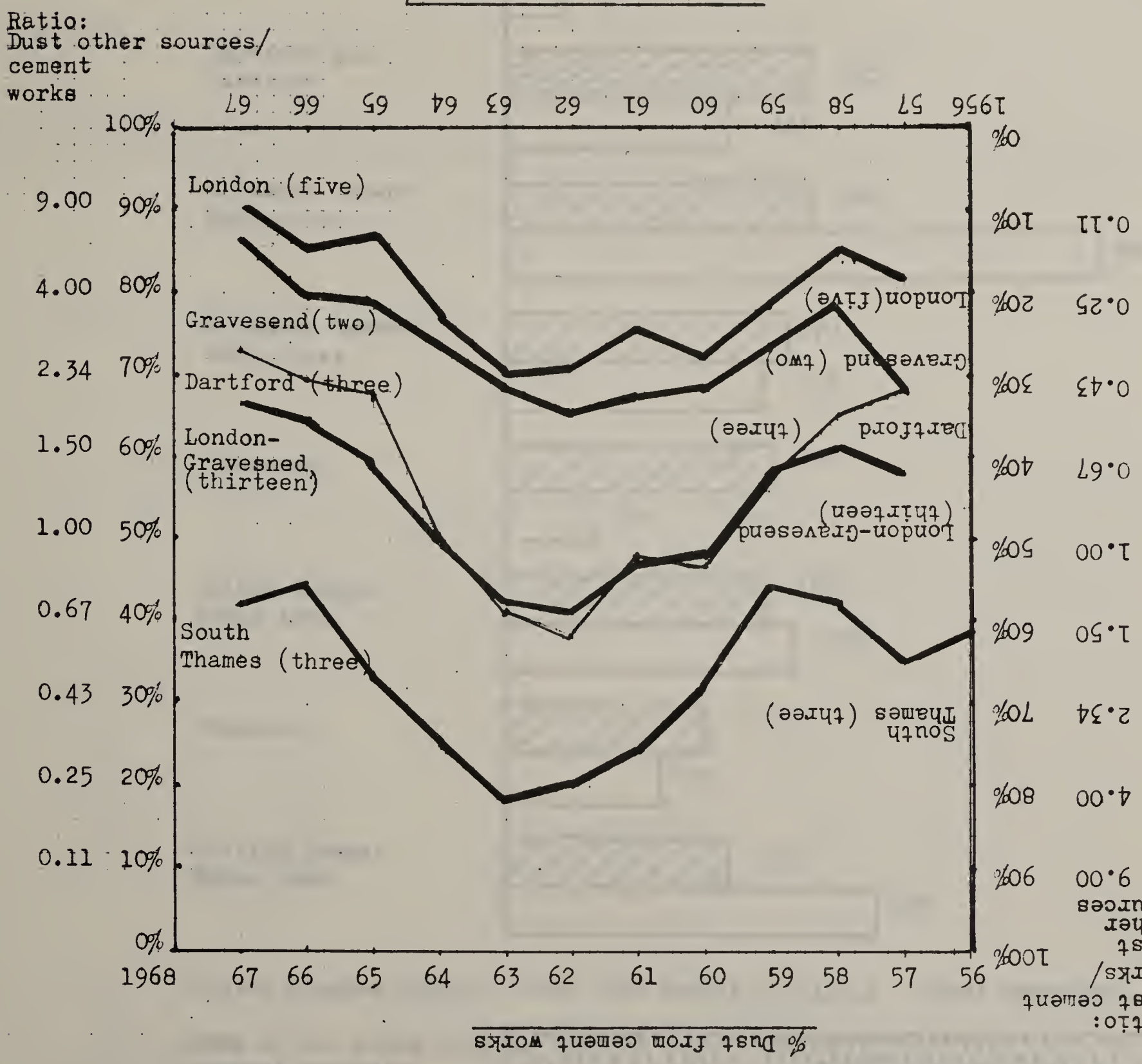




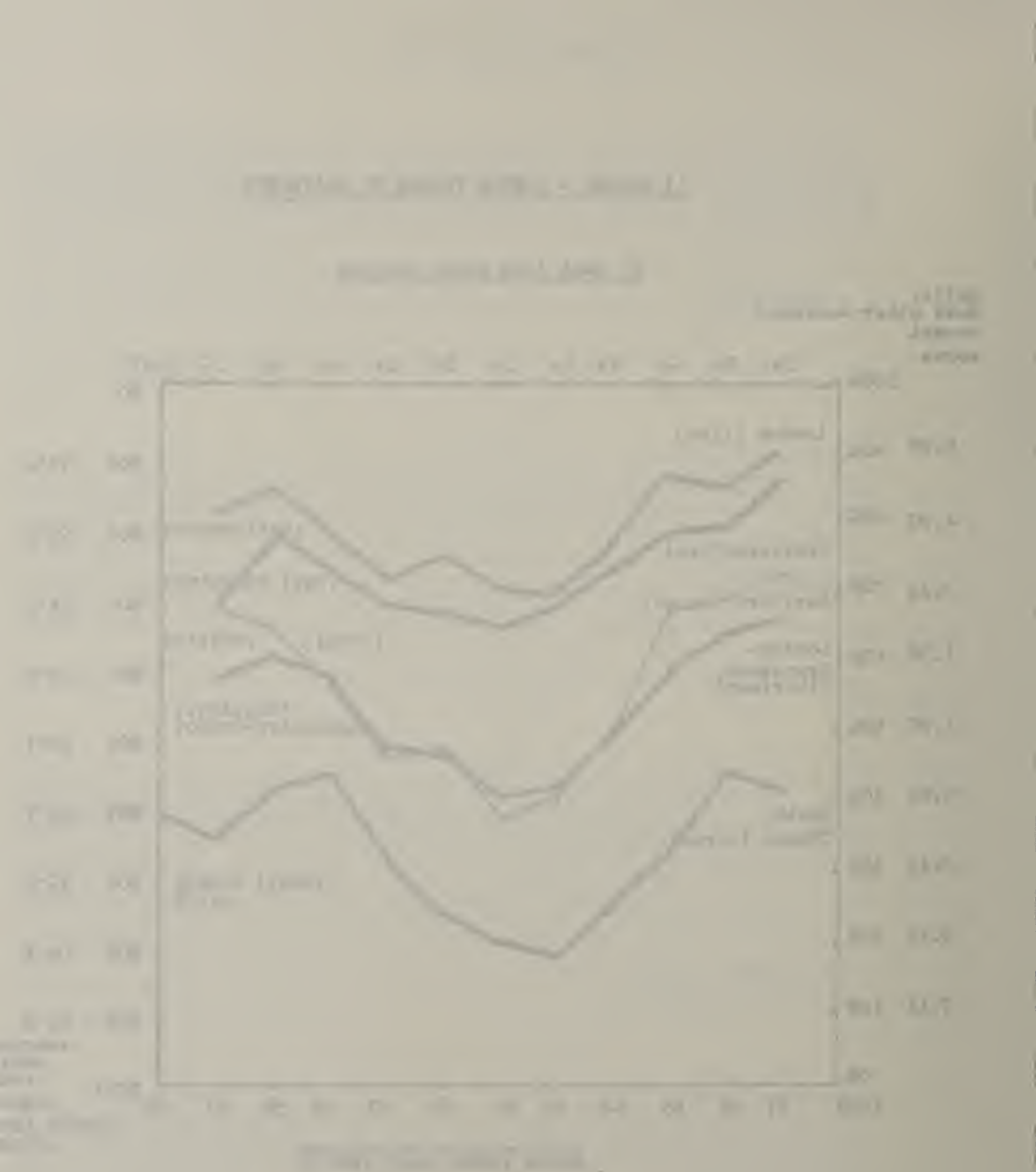
DUST FROM OTHER SOURCES



13 GAUGES - LONDON FRINGE TO GRAVESEND

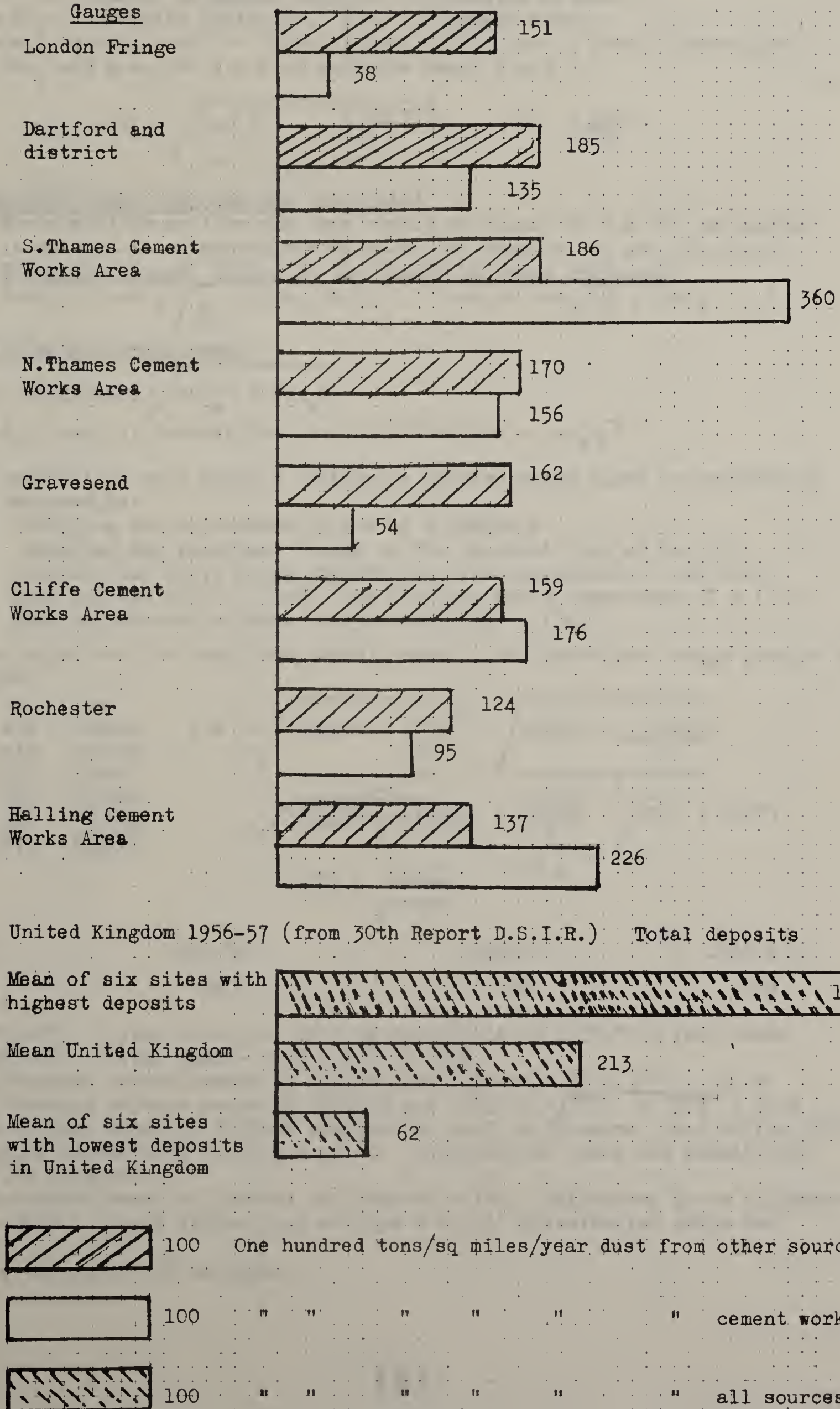


13 GAUGES - LONDON FRINGE TO GRAVESEND



YEARLY DEPOSITS DUST TONS PER SQ.MILE Mainly 1954-69

Weighted Means of grouped gauges



United Kingdom 1956-57 (from 30th Report D.S.I.R.) Total deposits

100 One hundred tons/sq miles/year dust from other sources

100 " " " " " " cement works

100 " " " " " " all sources

TABLE LXI

THE SIGNIFICANCE OF CHANGES IN THE AMOUNTS OF DUST DEPOSITS STATISTICAL METHOD BY WHICH THIS HAS BEEN ESTIMATED

Let x = each individual annual deposit
n = number of annual deposits represented by mean
s.d. = standard deviation, s.e. = standard error
s.e.5, s.e.4, s.e.3 = s.e. of mean of 5,4, and 3 years observations
$s.e._a$ and $s.e._b$ be s.e's of separate means a and b.

Then:

$$s.d. = \sqrt{\frac{\text{sum } x^2 - \frac{(\text{sum } x)^2}{n}}{n-1}} \qquad s.e. = \frac{s.d.}{\sqrt{n}}$$

s.e. for periods other than the one calculated

(i) Where periods are for the same number of years the s.e. for any period is assumed as an approximation to be the same as the one calculated.

(ii) Where the periods differ in the number of years contained

$s.e._4 = s.e._5\sqrt{\frac{5}{4}} = s.e._5 \times 1.1.$ $\quad s.e_3 = s.e_5\sqrt{\frac{5}{3}} = s.e_5 \times 1.3$

s.e. of difference between means

$$\text{s.e of difference} = \sqrt{s.e_a^2 + s.e_b^2}$$

If $s.e_a = s.e_b$ it follows that s.e of difference $= s.e_a\sqrt{2}$

The probability with which a difference between means might be produced by chance is obtained by:

(i) dividing the difference by s.e of difference
(ii) applying the resultant factor to the relevant line of the "t" distribution table using the 8th line for comparison of two five year periods (5-1) + (5-1) the 6th line for a comparison of a five year period with a three year period (5-1) + (3-1)

The calculations for dust from cement works in the Northfleet gauge provide an illustration.

	x	x^2
1960	434	188400
1961	332	110200
1962	343	117600
1963	361	130300
1964	300	90000
	1770	636500

$$s.d = \sqrt{\frac{636500 - \frac{1770^2}{5}}{5-1}} = \sqrt{\frac{636500 - \frac{3133000}{5}}{4}}$$

$$\sqrt{\frac{636500 - 626600}{4}} = \sqrt{\frac{9900}{4}} = \sqrt{2475} = 49.75$$

$$s.e_5 = \frac{49.75}{\sqrt{5}} = 22.2$$

Mean of yearly deposits	1955-59	1960-64	1965-67
	280	354	228

s.e for 1960-65 5 year mean i.e. 22.2 is applicable to 1955-59 5 year mean.
s.e for 1965-67 3 year mean = 22.2 x 1.3 = 28.8
s.e for difference between means of 1955-59 and 1960-64 = $22.2\sqrt{2} = 31.4$
s.e for difference between means of 1960-64 and 1965-67 = $\sqrt{22.2^2 + 28.8^2} = 36.4$
Difference between means of 1955-59 and 1960-64 = +74 difference ÷ s.e diff. = 74/31.4 = 2.36. Apply factor 2.36 to line 8 of "t" distribution table and probability of around .05 is given.
Difference between means of 1960-64 and 1965-67 = 126. Difference ÷ s.e difference = $\frac{126}{36.4}$ = 3.45. Apply factor 3.45 to line 6 of "t" distribution table and probability of around .01 is given.

TABLE IXII

TOTAL DUST

Site of gauge	Period*	Mean Annual deposit	Diff. from prev. period	S.E.based on last 5 year period	S.E. of diff.	Diff. ÷ by S.E.of diff.	Probability with which chance could produce the difference
SWANLEY	1961-64 (4 yrs)	161		10.9)	14.7	1.70	.1
	1965-69	186	+25	9.9)			
SIDCUP	1957-59 (3 yrs)	140		8.9)	11.2	1.61	.2
Black Fen	1960-64	158	+18	6.8))	9.6	1.46	.2
	1965-69	164	-14	6.8)			
SIDCUP	1955-59	153		7.0)	9.9	0.71	.5
Royal Pk	1960-64	160	+7	7.0))	9.9	1.42	.2
	1965-69	146	-14	7.0)			
BEXLEY	1955-59	187		8.4)	11.9	1.26	.2
	1960-64	172	-15	8.4))	11.9	0.50	.6
	1965-69	178	+6	8.4)			
ERITH	1955-59	202		6.3)	8.9	.34	.7
	1960-64	199	-3	6.3))	8.9	1.46	.2
	1965-69	212	+13	6.3)			
CRAYFORD	1955-59	253		11.2)	15.8	2.22	.05
	1960-64	288	+35	11.2))	15.8	4.12	.01
	1965-69	223	-65	11.2)			
DARTFORD	1955-59	305		11.7)	16.5	1.03	.3
Central	1960-64	288	-17	11.7))	16.5	1.76	.1
	1965-69	259	-29	11.7)			
DARTFORD	1955-59	340		18.9)	25.9	2.52	.05
Bow Arrow	1960-64	405	+65	18.9))	25.9	1.39	.2
	1965-69	369	-36	18.9)			
DARTFORD	1957-59 (3 yrs)	375		21.0)	26.5	1.43	.2
Joyce Green	1960-64	337	-38	16.1))	22.8	1.54	.2
	1965-69	302	-35	16.1)			
HORNS CROSS	1955-59	620		27.2)	38.4	0.86	.4
	1960-64	653	+33	27.2))	38.4	0.65	.5
	1965-69	628	-25	27.2)			
SWANSCOMBE	1955-59	564		10.0)	14.2	4.08	.01
	1960-64	506	-58	10.0))	14.2	1.64	.2
	1965-69	483	+23	10.0)			
NORTHFLEET	1955-59	507		43.7)	61.9	0.37	.7
	1960-64	484	-23	43.7))	71.8	0.85	.4
	1965-69	423	+61	56.9)			
THURROCK	1955-59	357		9.8)	13.9	2.80	.02
Ward Ave.	1960-64	318	-39	9.8))	13.9	2.23	.05
	1965-69	349	+31	9.8)			
GRAVESEND	1957-59 (3 yrs)	230		22.4)	28.2	1.17	.3
Dashwood	1960-64	197	-33	17.2))	24.4	1.06	.3
	1965-59	223	+26	17.2)			
GRAVESEND	1957-59 (3 yrs)	224		4.6)	5.8	1.60	.2
Swimming	1960-64	215	-9	3.6))	5.1	0.58	.6
Pool	1965-69	212	-3	3.6)			

TOTAL DUST (continued)

Site of gauge	Period*	Mean Annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. ÷ by S.E. of diff.	Probability with which chance could produce the difference
CLIFFE	1957-59 (3yrs)	292		7.3)			
	1960-64	363	+71	5.6))	9.2	7.74	.001
	1965-69	355	- 8	5.6)	7.9	1.14	.3
STROOD	1957-59(3 yrs)	219		12.7)			
CEMETERY	1960-64	218	- 1	9.8))	16.0	0.06	.9
	1965-69	220	+ 2	9.8)	13.9	0.14	.9
FORT	1957-59(3 yrs)	199		9.5)			
PITT	1960-64	189	-10	7.3))	12.0	0.83	.4
	1965-69	185	- 4	7.3)	10.5	0.39	.7
FRINDSBURY	1957-59(3 yrs)	220		24.1)			
	1960-64	214	- 6	18.8))	30.6	0.20	.8
	1965-69	240	+26	18.8)	26.6	0.98	.4
N.HALLING	1957-59 (3 yrs)	413		42.3)			
	1960-64	547	+34	32.5))	16.9	2.0	.1
	1965-69	480	-67	32.5)	46.0	1.5	.2

TABLE LXIII

DUST FROM CEMENT WORKS

SWANLEY	1961-64 (4 yrs)	39		6.7)			
	1964-65	25	-14	6.0)	9.0	1.56	.2
SIDCUP	1957-59 (3 yrs)	23		5.6)			
Black	1960-64	36	+13	4.3))	7.1	1.86	.1
Fen	1965-69	15	-21	4.3)	6.1	3.45	.01
SIDCUP	1955-59	27		6.2)	8.8	1.84	.1
Royal Pk	1960-64	43	+16	6.2))			
	1965-69	24	-19	6.2)	8.8	2.16	.05
BEXLEY	1955-59	28		4.0)			
	1960-64	42	+14	4.0))	5.7	2.46	.05
	1965-69	28	-18	4.0)	5.7	3.16	.02
ERITH	1955-59	38		3.4)			
	1960-64	46	+ 8	3.4))	4.8	1.67	.1
	1965-69	27	-19	3.4)	4.8	3.96	.01
CRAYFORD	1955-59	51		18.4)			
	1960-64	99	+48	18.4))	26.0	1.84	.1
	1965-69	48	-51	18.4)	26.0	1.96	.1
DARTFORD	1955-59	94		10.3)			
Central	1960-64	146	+52	10.3))	14.6	3.56	.01
	1965-59	86	-60	10.3)	14.6	4.11	.01
DARTFORD	1955-59	148		16.9)			
Bow Arrow	1960-64	267	+119	16.9))	24.0	4.96	.001
	1965-69	143	-124	16.9)	24.0	5.18	.001
DARTFORD	1957-59 (3 yrs)	118		9.7)			
Joyce	1960-64	155	+37	7.5))	12.3	3.01	.02
Green	1965-69	80	-75	7.5)	12.3	6.10	.001

DUST FROM CEMENT WORKS (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. ÷ by S.E. of diff.	Probability with which chance could produce the difference
HORNS CROSS	1955-59	413		24.5)			
	1960-64	517	+ 104	24.5))	34.5	3.02	.02
	1965-69	401	- 116	24.5)	34.5	3.36	.01
SWANSCOMBE	1955-59	322		8.7)			
	1960-64	379	+ 57	8.7))	12.3	4.62	.01
	1965-69	295	- 84	8.7)	12.3	6.80	.001
NORHTFLEET	1955-59	280		22.2)			
	1960-64	354	+ 74	22.2))	31.4	2.36	.05
	1965-67 (3 yrs)	228	- 126	28.8)	36.4	3.45	.01
THURROCK	1955-59	165		11.8)			
Ward Ave.	1960-64	202	+ 37	11.8))	16.7	2.21	.05
	1965-69	179	- 23	11.8)	16.7	1.38	.2
GRAVESEND	1957-59 (3 yrs)	59		1.7)			
Dashwood	1960-64	66	+ 7	1.3))	2.14	3.27	.02
	1965-69	38	- 28	1.3)	1.84	15.4	.001
GRAVESEND	1957-59 (3 yrs)	61		5.5)			
Swimming	1960-64	65	+ 4	4.2))	6.86	5.82	.001
Pool	1965-69	37	- 28	4.2)	6.0	4.70	.001
CLIFFE	1957-59 (3 yrs)	122		65.5)			
	1960-64	191	+ 69	50.5))	82.7	.83	.4
	1965-69	191	--	50.5)	71.5	0.00	1.0
STROOD	1957-59 (3 yrs)	95		13.1)			
CEMETERY	1960-64	116	+ 21	10.1))	16.5	1.27	.3
	1965-69	105	- 11	10.1)	14.3	.77	.5
FOR PITT	1957-59 (3 yrs)	73		6.1)			
	1960-64	77	+ 4	4.7))	7.70	.52	.6
	1965-69	56	- 21	4.7)	6.65	3.15	.02
FRINDSBURY	1957-59 (3 yrs)	76		22.1)			
	1960-64	92	+ 16	17.0))	27.9	.57	.6
	1965-69	108	+ 16	17.0)	24.1	.66	.5
N.HALLING	1957-59 (3 yrs)	292		31.8)	40.1	3.31	.02
	1960-64	425	+ 133	24.5))	33.6	3.87	.01
	1965-69	295	-130	24.5)			

TABLE LXIV

DUST FROM OTHER SOURCES

SWANLEY	1961-64 (4 yrs)	122		12.5)	16.9	2.3	.05
	1965-59	161	+ 39	11.3))			
SIDCUP	1957-59 (3 yrs)	116		7.4)			
Black Fen	1960-64	121	+ 5	5.7))	9.3	0.54	.06
	1965-69	148	+ 27	5.7)	8.1	3.33	.02

DUST FROM OTHER SOURCES (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff ÷ by S.E. of diff.	Probability with which chance could produce the difference
SIDCUP	1955-59	125		6.8)			
Royal Pk	1960-64	117	- 8	6.8))	9.6	0.83	.4
	1965-69	121	+ 4	6.8)	9.6	0.42	.7
BEXLEY	1955-59	158		5.2)			
	1960-64	129	- 29	5.2))	7.4	3.94	.01
	1965-69	150	+ 21	5.2)	7.4	2.85	.05
ERITH	1955-59	164		7.3)			
	1960-64	153	- 11	7.3))	10.4	1.05	.3
	1965-69	184	+ 31	7.3)	10.4	2.97	.05
CRAYFORD	1955-59	201		5.6)			
	1960-64	189	- 12	5.6))	7.9	1.52	.2
	1965-69	176	- 13	5.6)	7.9	1.64	.2
DARTFORD	1955-59	210		3.7)			
Central	1960-64	142	- 68	3.7))	5.3	12.95	.001
	1965-69	173	+ 31	3.7)	5.3	5.90	.001
DARTFORD	1955-59	192		15.5)			
Bow Arrow	1960-64	138	- 54	15.5))	22.0	2.46	.05
	1965-69	225	+ 87	15.5)	22.0	3.96	.01
DARTFORD	1957-59 (3 yrs)	257		21.5)			
Joyce Green	1960-64	182	- 75	16.5))	27.1	2.78	.05
	1965-69	219	+ 37	16.5)	23.4	1.58	.2
HORNS CROSS	1955-59	207		26.8)			
	1960-64	136	- 71	26.8))	37.8	1.88	.1
	1965-69	227	+ 91	26.8)	37.8	2.41	.05
SWANSCOMBE	1955-59	241		8.0)			
	1960-64	126	-115	8.0))	11.3	10.2	.001
	1965-69	188	+ 62	8.0)	11.3	5.3	.001
NORTHFLEET	1955-59	226		25.4)			
	1960-64	130	- 96	25.4))	35.9	2.68	.05
	1965-67 (3 yrs)	195	+ 65	25.4)	41.7	1.56	.2
THURROCK	1955-59	182		12.0)			
Ward Ave.	1960-64	116	- 66	12.0))	17.0	3.8	.01
	1965-69	170	+ 54	12.0)	17.0	3.2	.02
GRAVESEND	1957-59 (3 yrs)	171		24.3)			
Dashwood	1960-64	130		18.7))	30.7	1.3	.2
	1965-69	184	+ 54	18.7)	26.5	2.0	.1
GRAVESEND	1957-59 (3 yrs)	163		7.6)			
Swimming	1960-64	150	- 13	6.0))	9.8	1.3	.2
Pool	1965-69	175	+ 25	6.0)	8.5	2.9	.05
CLIFFE	1957-59 (3 yrs)	169		13.9)			
	1960-64	148	- 21	10.7))	17.5	1.2	.3
	1965-69	163	+ 15	10.7)	13.9	1.1	.3

DUST FROM OTHER SOURCES (continued)

Site of gauge	Period*	Mean annual deposit	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. ÷ by S.E. of diff.	Probability with which chance could produce the difference
STROOD CEMETERY	1957-59 (3 yrs)	124		5.9)			
	1960-64	102	- 22	4.5))	7.3	3.0	.02
	1965-69	125	+ 23	4.5)	6.4	3.6	.02
FORT PITT	1957-59 (3 yrs)	122		13.5)			
	1960-64	111	- 11	10.4))	17.0	0.7	.5
	1965-69	129	+ 18	10.4)	14.7	1.2	.3
FRINDSBURY	1957-59 (3 yrs)	144		5.3)			
	1960-64	122	- 22	4.1))	6.7	3.3	.02
	1965-69	131	+ 9	4.1)	5.3	1.7	.2
N.HALLING	1957-59 (3 yrs)	120		15.4)			
	1960-64	122	+ 2	11.9))	19.6	0.1	.9
	1965-69	185	+ 65	11.9)	16.8	3.8	.01

TABLE LXV

SUMMATED READINGS OF GROUPS OF GAUGES

Sites of gauges in group	Period	Mean annual summated reading	Diff. from prev. period	S.E. based on last 5 year period	S.E. of diff.	Diff. ÷ by S.E. of diff.	Probability for chance to produce difference
			TOTAL DUST				
SIDCUP(2)	1957-59(3 yrs)	922		36.6)	46.3	1.15	.3
BEXLEY,ERITH	1960-64	975	+ 53	28.3))	40.0	1.30	.2
CRAYFORD	1965-69	923	- 52	28.3)			
DARTFORD Ce	1957-59(3 yrs)	1006		52.0)	68.1	0.36	.7
DARTFORD B.A	1960-64	1031	+ 25	44.0))	62.2	1.61	.2
DARTFORD J.C	1965-69	931	-100	44.0)			
HORNS CROSS	1955-59	1690		82.0)	115.8	0.41	.7
SWANCOMBE	1960-64	1643	- 47	82.0))	134.5	3.37	.02
NORTHFLEET	1965-67 (3 yrs)	1191	-452	106.6)			
GRAVESEND	1957-59(3 yrs)	455		23.3)	29.4	1.47	.2
Dashwood &	1960-64	412	- 43	17.9))	25.3	0.91	.4
S.Pool	1965-69	435	+ 23	17.9)			
STROOD CEM	1957-59(3 yrs)	639		66.3)	83.7	0.20	.8
FORT PITT	1960-64	622	- 17	51.0))	72.0	1.43	.2
FRINDSBURY	1965-69	725	+103	51.0)			
			DUST FROM CEMENT WORKS				
SIDCUP (2)	1957-59(3 yrs)	171		36.8)	46.4	2.10	.1
BEXLEY,ERITH	1960-64	268	+ 97	28.3))	40.1	3.12	.01
CRAYFORD	1965-69	143	-125	28.3)			
DARTFORD Ce	1957-59(3 yrs)	365		41.2)	51.9	3.92	.01
DARTFORD B.A	1960-64	568	+203	31.7))	45.0	5.72	.001
DARTFORD J.C	1965-69	311	-257	31.7)			
HORNS CROSS	1955-59	1016		48.4)	68.4	3.43	.01
SWANSCOMBE	1960-64	1250	+234	48.4))	78.9	4.17	.01
NORTHFLEET	1965-67	922	-328	62.3)			
GRAVESEND	1957-59(3 yrs)	120		6.85)	8.64	1.28	.3
Dashwood &	1960-64	131	+ 11	5.26))	7.45	7.52	.001
S.Pool	1965-69	75	- 56	5.26)			
FRINDSBURY	1957-59(3 yrs)	248		39.4)	49.7	0.79	.5
STROOD	1960-64	287	+ 39	30.3))	44.7	0.38	.7
FORT PITT	1965-69	270	- 17	30.3)			
			DUST FROM SOURCES OTHER THAN CEMENT WORKS				
SIDCUP (2)	1957-59(3 yrs)	750		20.5)	25.9	1.55	.2
BEXLEY,ERITH	1960-64	710	- 40	15.8))	22.3	3.09	.02
CRAYFORD	1965-69	779	+ 69	15.8)			
DARTFORD CEN	1957-59(3 yrs)	641		40.6)	51.3	3.47	.01
DARTFORD B.A	1960-64	463	-178	31.3))	44.1	3.55	.01
DARTFORD J.C	1965-69	620	+157	31.3)			
HORNS CROSS	1955-59	674		58.2)	82.3	3.43	.01
SWANSCOMBE	1960-64	392	-282	58.2))	95.5	2.20	.05
NORTHFLEET	1965-67(3 yrs)	602	+210	75.7)			
GRAVESEND	1957-59(3 yrs)	334		26.4)	33.3	1.64	.2
Dashwood &	1960-64	280	- 54	20.3))	28.8	2.79	.02
S.Pool	1965-69	360	+ 80	20.3)			
STROOD CEM	1957-59(3yrs)	391		18.6)	23.6	2.38	.05
FORT PITT	1960-64	335	- 56	14.4))	20.3	1.97	.1
FRINDSBURY	1965-69	375	+ 40	14.4)			

ERRATA

The following should replace, as corrections, the relevant figures on previous pages.

Sites of gauges	Mean annual deposit	Difference from previous period	Standard error based on last 5 year period	Standard error of difference	Difference divided by standard error of difference	Probability with which chance could produce the difference
			Total Dust			
Cliffe	292		73)			
	339	+47	56))	92	0.51	.6
	355	+16	56)	79	0.20	.8
N. Halling	413		42.3)			
	547	+134	32.5))	53.4	2.5	.05
	480	-67	32.5)	46.0	1.5	.2
			Dust from cement works			
Gravesend	61		5.5)			
sw. pool	65	+4	4.2))	6.9	.58	.6
	37	-28	4.2)	6.0	4.68	.001
			Dust from other sources			
Sidcup	116 (3 yrs)		7.4)			
Blackfen	121	+5	5.7))	9.3	0.54	.6
	148	+27	5.7)	8.1	3.33	.02
Gravesend	171		23.3)			
Dashwood	130	-41	17.9))	29.3	1.4	.2
	1844	+54	17.9)	25.3	2.1	.1
			Summated readings of groups of gauges Total Dust			
Stood Cem.	639 (3 yrs)		29.3)			
Fort Pitt	622	-17.	22.8))	37.4	0.46	.7
Frindsbury	725	+103	22.8)	32.3	3.2	.01

DUST GAUGE READINGS 1969-1973.

The readings for these later years of deposit and impingement gauges have been analysed in separate reports to the Thames-side Joint Committee for the Abatement of Atmospheric Pollution.